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CANADIAN ARCHITECT AND BUILDER

VOL. II.—1889.

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CANADIAN ARCHITECT AND BUILDER

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CONSTRUCTION · SANITATION · ENGINEERING

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EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

VOLUME II.

WITH the present number, the CANADIAN ARCHITECT AND BUILDER enters upon its second year. In accordance with the expressed desire of a large number of our readers, the form of the paper has been so changed as to make it more convenient for binding. It will be noticed that while the size of the pages has been reduced, the number of them has been increased. We still find ourselves short of reading space, however, owing to our rapidly increasing advertising patronage, and shall probably find it necessary to again increase the number of pages. We regret that for lack of space, several interesting articles intended for publication in this number have to be held over. Other changes, designed to improve the appearance of the journal, appear in the present number, and are of a character, we trust, to meet with the appreciation of our readers. We had something to say last month about the favor bestowed upon this journal during the first year of its existence. We are now in a position to state that during the last month nine-tenths of the advertisers whose contracts expired with the close of Volume I, renewed them for the present year, and in addition, sufficient new contracts were made to increase considerably the average business done last year. Since the announcement was made of our intention to publish the "Canadian Contractor's Hand-Book" as a premium to new subscribers to the CANADIAN ARCHITECT AND BUILDER, many subscriptions have been received daily from all parts of the Dominion. With such an encouraging prospect before us, we can have no doubt of the permanent success of this journal, and shall in every way possible endeavor to make it worthy of the generous support accorded it. Many architects and others of our readers have materially assisted to promote its interests during the past year, by making reference to it as the source of their information when writing to firms whose advertisements they have seen in these pages. We trust that during 1889, the assistance given us in this direction will be much more general. It is a pleasure to observe the constant increase in the number of persons who contribute information of one kind or another adapted to the needs of our readers, through the medium of these pages. Such contributions, when of practical value, written concisely and to the point, will be ever welcome.

INVITATIONS have been issued for a "Conversazione" under the auspices of the Canadian Society of Civil Engineers, to take place in Montreal on the evening of the 17th inst.

THE City Solicitor of London, Ont., has given it as his opinion that the Local Board of Health has no power to compel the Water Commission to lay a water main in any part of the city. In consequence of this decision, it is said, the children attending one of the public schools are compelled to drink from a filthy well. Under such circumstances the validity of the Solicitor's opinion should at once be tested, and if found to be legal, application should be made to the Legislature on behalf of Local Boards of Health for power to compel compliance with conditions necessary to the prevention of disease.

WE are pleased to notice that harmony of feeling and interest between the architects and members of the Builders' Exchange, of London, Ont., appears to have been completely restored. In celebration of such a desirable consummation, the architects, builders and contractors of the city banquetted together the other evening and voted each other "jolly good fellows," which nobody will deny. We hope and believe that in future the parties to the recent dispute will be able to see eye to eye, and work harmoniously together for their mutual interest and the progress and prosperity of the city.

A CORRESPONDENT, writing from Montreal, calls attention to the fact that while Canadian architects very reasonably and properly complain of the conduct of those who, passing by native talent, give the designing and construction of their buildings into the hands of foreign architects, they are themselves in many instances guilty of equally unpatriotic conduct, inasmuch as they specify materials of foreign manufacture in preference to those produced in the Dominion. Our correspondent makes a point when he states, that if Canadian architects lead their clients to believe that materials of Canadian manufacture are necessarily inferior to those of foreign countries, they should not be surprised if in course of time their clients become educated up to the idea that Canadian architects must also be inferior to those of other countries. We hope that the practice of which our correspondent complains is by no means a

general one. That it obtains to too great an extent, however, we have had ample opportunity of knowing. We could name instances in this city, recently, where appliances of American manufacture have been specified, when a Canadian article of equal merit might have been obtained without even going beyond the boundaries of Toronto. Such conduct is unpatriotic in the extreme, and deserving of the severest censure. There are many lines of manufactured goods used in modern building construction which are not yet produced in Canada, and which must be obtained elsewhere. In all cases, however, where materials of Canadian manufacture can be obtained approaching nearly in quality foreign goods, preference should be given them. In this way we should help to build our country and each other up. Encouragement would be given for the establishment of new lines of manufactures, and for the further perfecting and development of those which already exist. Adapting the words of the poet to the case :

"Let us to ourselves be true,
And it follows as the day the night
We cannot then be false to any man."

ONE of our illustrations is a perspective view of the design submitted by Messrs. Darling & Curry, of this city, for the proposed Departmental and Legislative buildings for this province, which are now being erected in the Queen's Park according to the design prepared by Mr. Richard A. Waite, of Buffalo, N. Y. In the first competition, which was open to the world, the design of Messrs. Darling & Curry was awarded first position in merit, although the experts did not consider that they were entitled to any of the premium because they had exceeded the limits of cost. There were a number of plans submitted from the States, but none were fortunate enough to obtain mention. As the result of a second competition, it was decided to have the first premiated design and the above design submitted to tender, to settle the matter of relative cost. Working drawings, details and specifications were prepared, and tenders received. The lowest tender for Messrs. Gordon & Helliwell's design—the premiated one—was $542,000 ; and for Messrs. Darling & Curry's design, $612,000. The Government decided not to proceed with the erection of the building as the figures were too high, although they have since commenced the erection of a building which will cost not less than $2,000,000.

There was nothing more done until the Government obtained a vote of $750,000 for these buildings. They then decided to submit the two designs to an expert, and then decide their relative merits. The expert chosen was Mr. R. A. Waite, of Buffalo, who, while he did not decide in a manner to meet with the approval of the competitors, seems to have met the wishes of the Government, and thus gained for himself most liberal treatment, as he eventually secured the commission, and, to all intents and purposes, full permission to expend any sum reasonable or unreasonable. No one has yet been able to discover the nature of his reports on the two Canadian designs. The Government has treated them as confidential, even to refusing to allow the competitors to see them. When the Commissioner of Public Works was asked in the House to bring down Mr. Waite's reports on the Canadian designs, he refused, on the plea that he had not the permission of the authors of these designs. When the competitors asked him for the reports, he gave an entirely different reason, as one may easily understand. However, the reports cannot be seen, and consequently no one is able to judge as to their character.

There is another side of this question which is of considerable importance to the people, and that is. what description of building is the Province really getting in its new Legislative and Departmental Buildings? If the members of the Ontario Government know, they are the only persons who do, and we have our doubts as to their knowledge of the matter. The Canadian architects were held down to a definite expenditure, and even obliged to have the entire work ready for tender, so that the full expenditure would be known before the work was commenced. But when the work is entrusted to a citizen of another country, all carefulness as to expenditure ceases. Only one branch of the work was submitted to tender, *and even when that exceeds the appropriation for the entire building*, a contract was entered into, and the Province was committed to the erection of the building, no matter what it may cost. A lithographic print of the buildings as they are being erected has been published, and from that source ideas may be gained of what the building will look like when completed. We will allow our readers to judge as to which is the better design of the two. That one of them is a most carefully studied piece of artistic work, as compared with the other, will be admitted. We will allow those who can see any merit in the inferior design to point out where the merit consists. The chief value, in our eyes, is its size, which must impress a person at first sight ; but a close and careful study will show that there is not one really good or interesting feature about the building.

We do not understand the apathy of the people of this province as to the erection of this most important work. They do not seem to care whether it is built according to a good plan, or is an artistic building. They do not seem to care what it will cost, or if they are receiving value for their money. They allow a Government which should be the servant of the people, practically to tell them that it is none of their business. The Government refuse to give any information, and when they do make a pretence of doing so, it is almost invariably misleading, as it is apparently meant to be. Why all this withholding of information from those who should be informed? Is the Government afraid that the plan of their architect from the States will not bear the full light of day?

COMPETITIONS.

A NUMBER of architects practising in Toronto have received copies of the following circular :

"KINGSTON, Dec. 26, 1888.

SIR,—Enclosed we hand you resolution passed by our vestry at the late meeting. If you feel disposed to offer suggestions or submit plans, we shall be pleased to receive same, provided they are submitted without cost. We shall be happy to give further information if desired.

Yours truly,

R. WALDRON, } Church Wardens."
J. MUCKLESTON, }

"At a meeting of Finance Committee of St. George's Cathedral lately held, the following resolution was passed : That the church-wardens be requested to solicit designs for the proposed alterations, involving the removal of the side galleries, and increasing the interior accommodation to 800 on the ground floor ; such designs not to be charged for unless adoped by the Vestry, and such designs be submitted to a subsequent meeting of this Committee."

We have come across many competitions the conditions of which showed most conclusively that the framers of them had no conception whatever of the nature of an architect's duties, or the slightest idea that an architect had any respect for himself or his profession. We must confess that the above suggested competition surpasses anything we have heard of in its cool proposal that architects should submit schemes to alter a church in some way or other, in the hope that some one of them may obtain a small commission by submitting a scheme which may meet with the approval of incompetent judges. If these men were competent to decide an architectural competition, they would never have proposed one under the circumstances, but instead, would have devoted their time and intelligence to the selection of an architect who would be able to give them the advice they require. This arrangement would certainly necessitate the paying of an architect a reasonable fee for his services, which, no doubt, is a serious objection in the eyes of those who are much more desirous of having some pet scheme of their own carried out, than accepting the careful and studied advice of a man who has made the profession of architecture his life's work. We take this opportunity of informing the Vestry of St. George's Church that they will not receive any response from any capable architect in this province. The travelling expenses to Kingston and return would very likely be more than could be made out of the entire work if the building committee should be as carefully niggardly in dealing with the possible winners of the competition as they have been in the arranging of this (to be hoped abortive) competition.

There is some suggestion of taking out the side galleries of the church and obtaining additional seating in some other manner. Let us hope that no such thing will be attempted, or anything else which would injure this really good piece of classical work. This building may have faults, but we say most emphatically that it is too good a building in its every part to be meddled with beyond what is absolutely necessary to make it capable of meeting the requirements of the present time, and then only by an architect equally as competent as the designer of the building. It was designed to receive galleries, and the galleries should therefore remain. They are most appropriate and artistically satisfactory. The seating may be badly arranged and inconvenient, but that can easily be made right. The fronts may also be so high that no one can see over them, but that can be remedied by lowering the fronts or raising the floor of the galleries. All that the building requires, artistically, is that the windows be glazed with good glass, and the interior decorated to bring out its good qualities and to cover up its few defects.

We also hear of a competition at Woodstock, Ont., the conditions of which should be copyrighted, so that the committee which drew them up might receive some money value for their ideas of the proper methods of dealing with architects. Why this committee did not make it a condition that competing architects should send along with their designs a subscription to the building fund, is more than we can understand.

When will the ordinary individual discover that an architect is not a man of trade?—that he does not receive a commission for guaranteeing impossibilities, but for performing a definite piece of work according to the best of his ability.

The committee may understand that the members of the Architectural Guild of Toronto will not compete, and to that extent the competition will be a failure. We will refer to this matter in our next issue.

LOYALTY TO CANADIAN INDUSTRY.

MONTREAL, Jan. 8th, 1889.

Editor CANADIAN ARCHITECT AND BUILDER.

IN the issue of December 22 of the *American Architect*, I notice the correspondent for Canada deals a rather hard rap at American architects. Can any blame be attached to the architect whose services are sought after by parties building in Canada? It certainly implies a lack of confidence in the profession in Canada on the part of those who, residing in Canada, choose to seek their "talent" for building elsewhere. I agree with the writer in his indignation at this state of things, but who is more responsible for the public having this "leaning" than the "profession?" There are architects in this city who have systematically opposed the introduction of "domestic" work in buildings of their construction, not giving it an opportunity to demonstrate its unsuitableness. Now, sir, if an architect impresses on his client the necessity of buying furnishings from abroad, is not the natural conclusion of the "client" that all things keep pace with each other, and even the *buildings* must be proportionately better? resulting in the prejudice of the architects, like a double edged-sword, cutting both ways. There is a peculiar coincidence, that the architect who "buys abroad" and the client who "plans abroad" are both willing to expend more on "furnishings" or "plans" abroad, than either would "at home."

To make comparisons of results, the building now being erected for the Methodist Society, improves when compared with the New York Life Building, and a residence now being erected on Sherbrooke street, would be in keeping with 5th Ave., N. Y., edifices. Meanwhile, it is a little enjoyable to note the humor in which the profession take the present "epidemic" in this city for the American architect. If the profession would endeavor to create confidence in home industrial work, and by kindly advice as to shortcomings, encourage same, the tide which appears to be setting in in favor of things American, might not be so marked.

DOMESTICUS.

MEASURED DRAWINGS COMPETITION.

THE Committee of the Toronto Architectural Guild appointed to examine competition drawings for the measured drawings prize, have reported as follows :

"Your committee appointed to examine and report on the students drawings in this competition found the task before them a much more difficult one than they anticipated. Owing to the general excellence of the drawings submitted, it was no easy matter to decide which was really the best of all. The subject—the Eastern Entrance Doorway of the Toronto University—a building in the Norman or round arched Gothic style—is one which necessitated a very great deal of trouble, and the expenditure of a great deal of time. It embraced scale drawings to small scales and to large scales, and full sized details that could only be drawn free hand, and it may be considered a very decided test as to the abilities of each student. It is no small matter of credit to each one, that although the amount of real hard work and steady application must have proved far greater than anyone anticipated on deciding to enter the competition, not one failed to submit the required number of drawings, or attempted to scamp what he did in order to send in the whole set. Everyone appears to have gone about the work in a most painstaking and conscientious manner, and although only one could obtain a prize, none need feel any shame that he is not the winner, or regret that he entered into the task. Each student will have found great benefit to himself, and the work he has accomplished will have opened his eyes not only to his own deficiencies in knowledge of the subject, but to the fact that there is far more in architecture than possibly he had ever expected.

By reference to the table of marks, the exact relative position of each drawing will be seen. Not only has each set as a whole been compared, but every single drawing also, and its place duly assigned.

And now, a few remarks upon the drawings themselves. In the case of the one placed last on the list, it is only fair to call attention to the fact, that the author is found to be a student of only one year's standing—the junior of all the other competitors by several months—and he has shown considerable pluck and perseverance in entering the competition at all. His motto "*Labor Omnia Vincit*" is a good one to start out upon ; if he goes on in this spirit through his course of pupilage, he will do well.

"Venture" sends in a set of drawings (placed 5th) very elaborately shaded in pen and ink, and with Indian ink brush work on his full sized details. It is a very pretty set of drawings, though divided up on a good many small sheets, but this kind of shading work is not the best for measured drawings, and his work has to be judged altogether apart from the effect produced by this mode of finishing. Correctness of outline is of more importance, but the labor expended shows that the author has his heart in his work.

"Green Seal" (No. 6) has, although he has worked very hard and industriously, made a mistake which it will be well for him to correct in future ; it is that of doing a great deal of work not asked for, to the omission of that required. He has devoted much time and labor to the theory of the formation of the spirals and curves of the mouldings and has not completed the essential and practical drawings. His drawings are carefully executed and show great precision, and the fact that his section of the jamb and arch mould gained the highest mark for that subject, intimates that had he kept to the requirements of the competition, he would have gained a better position.

"Greek Fret" is apparently a youthful student. His drawings are fairly well executed, but rather mixed up together ; but as a beginner, he also deserves great praise for his work, and when he sees how others have arranged their sheets, he will know how to do better another time. He occupies the seventh place.

Of the two sets by "Scotia" (placed third), and "Albion" (placed fourth), it was a very difficult matter to decide which should take precedence. As will be seen by reference to the table of marks, their drawings are very much alike in merit. The drawing of both is very good, and the arrangements are

fair, "Albion" taking a few more marks than "Scotia" on the drawings of the cap and mouldings of the arch and jamb and in general arrangement and neatness. "Scotia" has hit upon an important matter, viz., that of carefully figuring his details, and though "Albion" has in some cases done likewise, his system is not so good as "Scotia's." The result is that "Scotia" obtains thirteen more marks than "Albion."

"Le Noir" has prepared a very careful set of drawings, well arranged and finished up, and his sheets present a very attractive appearance. The manner in which he has "printed," too, his drawings, and put in the accessories, deserves great credit, and the fact that his marks are only twelve less than the prize winner, shows that he deserves great praise.

To "Trifoil" (or Three Circles) the highest number of marks is awarded, not that his drawings are so very much better than others, for it has been shown that all are remarkably good. The whole set is good. The measuring has been carefully done, and the plotting done with exactness. "Le Noir" and "Venture" are better than "Trifoil," however, in their free-hand drawing of the capital, and "Green Seal" in his drawing of the jambs and arch mouldings. "Le Noir" also comes out ahead in general arrangements. Of the other subjects "Trifoil" has gained the highest marks. The following is the table of marks:

Motto or Sign	Plan, Elevation, Section	Capital, full size	Iron work	Cap & Arch Mould, etc.	Section Jamb & Arch Moulds	General Neatness and Ar'ng'm'nt	Total
"Trifoil"	200	94	100	100	49	45	588
"Le Noir"	198	100	98	88	40	50	574
"Scotia"	188	92	90	96	44	38	548
"Albion"	186	90	82	98	39	40	535
"Venture"	184	98	80	88	30	37	517
"Green Seal"	160	88	80	35	50	30	443
"Greek Fret"	156	80	70	40	35	34	451
"Labor etc."	120	40	30	20	28	20	528

(Signed,) F. DARLING
W. G. STORM
J. GEMMELL
R. W. GAMBIER-BOUSFIELD.

OUR ILLUSTRATIONS.

A VILLAGE CHAPEL—LANGLEY & BURKE, ARCHITECTS.

THE *motive* is taken from a section of country where stone fences abound. Reference to the plan will indicate the general scheme. A stone wall encloses the entire lot, than which nothing in the way of a fence can be more satisfactory, in the matter of both form and color, each passing year enhancing its beauty.

The chapel, up to the level of the window sills, would be built of the same stone as the fences, and above, of frame, to be either plastered and roughcast, or weather boarded or shingled, the latter a favorite method in New England and the Lower Provinces.

The chapel as shown in the design would accommodate about 325 persons, and has a generous vestibule in the tower. The baptistry would be open, and candidates would descend and ascend without being exposed to view. The school building is directly connected with the chapel by broad folding doors, enabling an audience of 400 to 500 persons to participate in the services on special occasions. Opening off the school-room are infant and bible class rooms. An ample porch gives independent access to the school building. The prevailing color of the stone walls would be a reddish grey, exhibiting a variety of tints when sledged and giving the key to the coloring of the work above.

The casings, corner posts, the eaves and gable-mouldings would be painted a cottage brown, the walls if shingled, would be either left to assume a soft grey by the touch of time, or the shingles would be dipped before being put on in a stain of burnt sienna. If walls are roughcast they would be either left the natural color of the lime, or tinted a soft salmon.

The roofs would be painted terra cotta or left to assume the soft gray shades already referred to. The chimney and vent stack would be built of dark red bricks laid with brown joint. The interior would be finished with pine, oiled and slightly stained.

DESIGN FOR THE PROPOSED DEPARTMENTAL AND LEGISLATIVE BUILDINGS FOR THE PROVINCE OF ONTARIO, AS PREPARED BY MESSRS. DARLING & CURRY, TORONTO.

The cost of erecting the buildings in accordance with the above design would have been, as per lowest reliable tender, $612,000.

TORONTO ARCHITECTURAL GUILD.

THE Architectural Guild of Toronto met on the 13th of December, and carried forward much important business. There was a very good attendance.

The first meeting of the Guild for this year took place at the "Hub" on the evening of January 10th. There was not as large an attendance as usual, but there was a very interesting meeting, and much business of importance transacted. The following officers were elected for the present year: Secretary and Treasurer, Mr. S. G. Curry; Executive Committee, Messrs. D. B. Dick and E. Burke. There is a balance to the good of over $200 after all expenses have been paid. The annual fee was increased to $15, but the cost of the monthly dinner is to be defrayed out of the general fund. It was decided that the entrance fee should be $10 during this year. The committee appointed to decide the measured drawings competition handed in their report, which is printed elsewhere. The committee on tariff changes also handed in their report. It was decided to have the report printed before discussing it. The committee having in charge the formation of an Architectural Society for the province, reported progress. The members were inclined to think the progress was very slow, but hoped that a report would be received from this committee at the next meeting.

LONDON.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

I AM glad to be able to inform you that the long pending difference between the architects and builders here in regard to the form of contract to be adopted, has been settled agreeably to all parties.

Tenders will be opened for the conversion of a large wholesale house on Talbot St., into an hotel, probable cost $10,000, and for the erection of a Methodist Church in the north part of the city, to cost $14,000

BOSTON.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

THE architecture of Boston is known so well by all lovers of the art on this side of the Atlantic, that it would be superfluous to say anything regarding its older buildings. Few there are among the readers of this paper who have not, either by actual sight, or through the agency of published prints, become familiar with all its public and private edifices worthy of note, which have been standing for any length of time. So we shall confine the limits of the letter, to a short description of some of the principal buildings now in process of construction.

On the 28th of November, the corner stone of the new Public Library was laid. Among those taking part in the interesting and impressive ceremony, were Mayor O'Brien, Dr. Oliver, Wendell Holmes, and Mr. McKein, of McKein, Mead and White, the architects. All the drawings of the proposed building were on exhibition at the old state house some time ago, and were viewed by large numbers of architects, draughtsmen, and other interested citizens daily. Though at first, their seemingly simple and unpretentious lines rather troubled some of the city fathers and others not used to such architecture, almost everyone now seems to be of the opinion, that nothing more appropriate could be built. Copley square on which has been chosen the site of the new building, will on its completion contain a unique architectural group, which in themselves would be worth a visit to Boston, to any architectural student. There are to be seen the Museum of Fine Arts, the new old South Church and Trinity Church, and the massive imposing and beautiful structure which the new Library bids fair to be will form not the least in this grand collection. Mention should also be made in this connection of the large addition to the museum of fine arts now in progress, by which its capacity will be about doubled. The terra cotta work which formed the distinguishing feature of the old building has been left out of the new, probably on account of the cost. From Copley square and its beautiful buildings we wend our way to Pemberton square, and there our thoughts are turned into an entirely different channel as we gaze on the huge piece of construction, whose walls have just been completed. There is the new Court House, artistically speaking there is nothing to study in the building, for the design is common-place among the common-place. The building will probably meet its requirements in a good and workmanlike manner, but it is certainly a great pity, that in a city like Boston, so important a building was permitted to be built from so tasteless a design. Speaking of the Court House it might be mentioned that the buff colored bricks, with which the

interior courts are lined, have been brought from the kilns belonging to the Hon. W. E. Gladstone at Hawarden, Wales.

It is to be expected that the present State House, whose gilded dome has been Boston's landmark for so many years, may have a rival soon: The state of Massachusetts has brought the property immediately in the rear of their present headquarters, and a supplementary building will probably be erected, as soon as possible. The terms for an architectural competition are now being prepared, and it is not likely that much time will be wasted, as the present building though dear to the hearts of all Bostonians, is generally admitted to fall far short of its requirements in many ways.

On State street, architects Peabody and Stearns, are putting up what will probably be one of the finest office buildings in the city. The Fiske building, as it is called, occupies some 80 feet square of ground, and is ten stories high or 130 feet from sidewalk to roof, while the roof and the lantern which is to crown the building will bring the total height to about 218 feet. The State street front is of granite, and, with the exception of the main entrance which is a round arched, all the openings are square. The walls of the building have just been completed and though simple in design have a very fine effect. The roof, as the figures just given show is an important factor, in the design, and it is probable, that after the dome of the State House, it will be the first distinguishable feature of the city, by incoming vessels.

Boston can boast of few buildings that are high in the New York or Chicago sense. The Parker House has long stood pre-eminent among those buildings making any pretentions that way, but the Fiske building is even more aspiring, and a new nine story shop on the corner of Tremont and Beacon streets will likely prove a dangerous competition in the race. This latter building, which is now well on to completion is a plate glass and iron construction, whose design has evidently been governed by the necessities of its owners,—a large retail firm. The two street fronts are almost entirely window space. Six granite piers about three feet wide extend from basement to roof, and these to the uninitiated passer-by appear to carry a good deal more weight than they seem able to bear.

An interesting piece of constructive engineering is now in progress here, in the shape of the new Howard Bridge, which is being built across the Charles River, connecting the west end of the city with Cambridge. The bridge is 2,160 feet long and has 23 piers of 75 and 105 feet span alternately. The plate girders are built on the cantilever principle. They are floated into place on scows, then lowered on to the piers, by letting water into the boats thus sinking them to the required depth—altogether a very interesting process to watch. The foundation for the stone piers is composed of spruce pines which are cut off two feet below water (the river here being affected by the tides.) Four inch sheet piling is then built around them and a concrete cap is put on, the concrete extending down 8 feet amongst the piles, thus completing the work. Messrs. Shields and Carroll the contractors for the masonry work and foundations are a Toronto firm. This bridge is expected to be done by next June.

A new addition to the large number of statutes and monuments in this city, has recently been erected on the common facing Tremont street. The Attucks monument, as it is called, has been erected to the honor of the five men, (a negro, Crispus Attucks, being the leader,) who in the year 1770 fell in what is called here the Boston massacre. The memorial consists of a granite column and a bronze female figure with a broken chain in her hand and an eagle with spread wings at her feet. The shaft of the column is round but the base has been elongated on one side and on it stands the figure. The bronze work has been much admired, but the column itself has created some dissatisfaction and will probably be altered.

On Friday evening the 30th of November, the rooms of the lately organized architectural club were opened. The occasion was happily chosen as a fitting one to tender a reception to Mr. Geo. F. Newton, the third Rotch Scholar, who has just returned from his travels. The meeting was quite informal but nevertheless was much enjoyed by all present. The numerous water color sketches, and pen and pencil drawings which Mr. Newton has made during his trip, were on exhibition, then, and during the following week, and have been much admired for their exquisite rendition and for the beauty of the subjects chosen.

The architectural club was formed last September for the social and artistic benefit of young architects and others interested in architecture. Since its organization its membership list has grown from twenty to over a hundred, rooms have been leased, and neatly and tastily fitted up and furnished, and much enthusiasm has been kindled among the younger branches of the profession. Classes are being formed and with such teachers as Ross Turner in water colors and D. A. Gregg in pen and ink work are an assured success. The rooms are centrally located at No. 6 Hamilton Place, and all visiting architects and draughtsmen will be made welcome.

The following have been elected officers of the Montreal Contractor's Association for the present year: President, Wm. Rutherford; First Vice-President, Jos. Brunet; Second Vice-President, J. R. Savignac; Secretary and Treasurer, A. Lapierre.

On the completion of work on the McClary Mfg. Co.'s new building, at London, Ont., the contractor for the brick work, Mr. Wm. Hayman, entertained his employees at a banquet. Among the guests was Mr. J. M. Moore, the architect of the building.

MONTREAL.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

THE past year on the whole has been a successful one as regards the building trade. At the commencement of the year, there was a decided disinclination to undertake any large contracts without a very large margin for a possible rise in the labor market. This, though causing a stagnation in affairs at the opening of the season, was soon settled on a normal basis, and, as a matter of fact, the cost of building has compared favorably with that of previous years. The following is a brief *resume* of some of the principal building operations:

The Canadian Pacific Railway depot, on Windsor St., a magnificent stone structure, modern Romanesque in style, of which Mr. Bruce Price, of Boston, is the architect, cost, over $500,000, is now nearly complete, and the various departments are taking up their quarters in the new building.

The new Bonaventure station of the Grand Trunk, replacing the infamous old wooden structure, is also completed and in working order, having been examined by the City Surveyor and duly subsidized as agreed by the city council. The building is of red brick and terra cotta throughout, and was designed by Mr. Scott, of Ottawa.

The Protestant Insane Asylum, after creating an amount of wrangling (tending to qualify some of the rival partisans as future inmates) is partly ready for the roof, the work having been pushed forward by Messrs. Stuart and Quinlan, the contractors, under the superintendence of the architects, Messrs. T. W. & E. C. Hopkins. The total cost will amount to some $125,000. The above firm are also engaged in carrying out a large extension at the "Windsor Hotel," the foundations of which have been put in. The design includes a large hall and concert room, the details of the wood work and finishings being very chaste and good. Messrs. Hopkins are also completing the large eight story warehouse (illustrated in your columns) on Craig street, for Mr. T. C. Wilson, the front of which is of pressed brick and terra cotta on a story of colored sand stone, the stone work being executed by Messrs. Barbeau & Fournier, the brick and terra cotta by P. C. Wand, and the woodwork by E. Roberts.

St. James st., however, has seen the "boom" localised—nearly every building of importance having either undergone, or being about to undergo renovation of some kind.

The colossal premises of the "New York Life Insurance" building on the corner of Place D'Armes Square, which completely dwarfs the towers of the French parish church, is now complete as regards the exterior, and will be occupied early in May. Messrs. Babb, Cook and Willard, of New York, are the architects, the masonry having been well executed by Peter Lyall, and the carpenter's and joiner's work by Simpson & Peel.

Nearly opposite, the old C. P. R. offices have received such sweeping alterations and enlargement by the same contractors, under the superintendence of Mr. C. Clinton, architect, New York, as to be hardly recognisable. The façade is effective, with an open colonnade of Corinthian columns over the original Doric and Ionic orders. It will be occupied in May by the Imperial Fire and Life Insurance Company.

From this westward, the whole aspect of St. James St. is changed—first, by the large red sand stone block of stores and offices erecting on the site of the old Methodist church, of which Mr. A. P. Dunlop is architect, the stone work being carried out by H. Hutchison, and the carpenter work by W. McDonald. The new Methodist Church on St. Catharines St., by the same architect, will be opened early in the summer, the school and class rooms being already occupied.

The City and District Savings Bank opposite, has been remodelled and an additional story added, forming fine suites of offices with elevators and modern appliances, at the hands of Mr. A. Raza, architect, who has also rebuilt the premises of Messrs. Bourgeau and Perrault, making a bold and effective front of the buildings which were burned out a year ago.

"Nordheimer's Hall" is also approaching completion, the premises having been completely gutted after the last fire, and rebuilt as stores and offices with granite front, by Mr. T. R. Browne, architect, who also has in hand the "Royal Insurance" Company's building at the corner of Place D'Armes Square and Notre Dame St., also the remodelling of the Molson property on St. James St., at a cost of $20,000.

The Mechanics' Institute has had two additional stories added, and the interior formed into offices all fitted up in good style by Messrs. Wright & Findlay.

The suburbs are full of new villas, some of harmless character, others, "things to shudder at, not to see." Mr. A. T. Taylor is engaged on a large residence for Hon. Geo. Drummond, on Sherbrooke St., which is of a very high order of design. This house, with Sir Donald A. Smith's premises on Dorchester St., by Messrs. Hutchinson & Steele, ought to convince any impartial mind that there is no absolute necessity for importing foreign talent whenever anything more than the stereotyped 23 ft. front "villa residence" has to be erected.

The last named firm have also completed a fine block of eight houses on Sherbrooke St., for Mr. T. Heenan, of New York, at a cost of about $80,000. These fronts are very effective, and free from the prevalent indispensable "Queen Anne" mansions.

The various departmental schools have received extensive alterations, and a large new school erected at the west end by the same architects.

A Methodist training college is in course of erection at Cote St. Antoine, by Mr. T. P. Hill, architect, at an outlay of about $50,000.

New middle class schools in connection with the Church of St. John the Evangelist, are being erected from the designs of Mr. P. B. Williams, at a cost of about $30,000. They will be ready for occupation for the summer term.

The School of Art in connection with the Council of Arts and Manufactures for the province, of which S. C. Stevenson, B. A., is secretary and director, is in full swing and doing good work in affording technical instruction in the various branches. The total number of students is over 400, of all ages from 15 to 40. The classes are free with an entrance fee of one dollar which is returned to regular attendants at the close of the session, and are as follows: Freehand drawing, Messrs. E. Breguit and F. S. Cleverley; advanced freehand model and object drawing, Mr. Rene Quintin; mechanical drawing, J. T. Gardhan; architectural drawing, E. Belanger, C. E.; modelling and wood carving, Arthur Vincent; lithography, T. A. P. Labelle; decorative painting, F. E. Meloche; stair building and building construction, L. H. Blouin; plumbing, F. Horton; pattern making class (for boot and shoe makers) Messrs. T. Godin and A. Patrie. The plumbing class is under the control of the "Plumbers' Association," who agree to deduct one year from the term of appreaticeship of all pupils. The classes are held every evening from 7:30 to 9:30.

The Plumbers' Association is in a flourishing condition, being now in the third year of its existence. Monthly meetings are held in the rooms of the Contractors' Association, (of which this society is a section) and papers are read and discussed. About 40 members have joined the Association, which has for its object the raising of the standard of both work and workmen. When this has been effected in some degree by means of the Plumbing Class above mentioned, it is hoped the system of licensing after due examination may be introduced into the by-laws of the corporation. Mr. John Date is President, Mr. F. X. Drapeau, Vice-President, and Mr. J. W. Hughes, Sec.-Treasurer.

FACTORY CHIMNEY CONSTRUCTION.

By Wm. Knox, Architect and C. E.

A TALL chimney is seldom a very pleasing architectural feature; yet it is an important part of factory construction, requiring special architectural skill, a point not often acknowledged by either architects or owners. A manufacturer contracts with a boiler-maker for a certain amount of power from a given quantity of coal, and if he fails to perform his contract there is trouble, when the chimney may be the whole cause of the failure.

If a chimney is required to take away gases or fumes from retorts and furnaces, then it must be built to a height sufficient to carry these clear off the surrounding premises. This height can only be determined by a knowledge of the nature of the gases, etc., and the situation of the factory.

In the following paper it is only intended to deal with a chimney necessary for ordinary factory purposes.

In order to give the required draught to the common steam-boiler, the chimney should be not less in height than 80 feet above ground surface at its base, and not exceed 150 feet unless there is higher land in the immediate neighborhood.

To find the necessary area of a chimney, first ascertain as nearly as possible the area of the grate bar surface of the various furnaces; then if the chimney is to be 80 feet in height above the ground surface, multiply the area of the grate surface in square feet by 14; for a chimney 100 feet high, multiply by 11; for a chimney 120 feet high, multiply by 12; and for a chimney 150 feet high multiply by 9.8, and the quotient in each case will be the area of the chimney in square inches at its narrowest point. The area at the top of a chimney should never be less than at the base; some engineers say that it should be greater, because the smoke and air entering the chimney at a very high temperature, ascends rapidly, but as it cools in its passage through the flue its progress gradually becomes slower. A square chimney was erected by us last year, in Hamilton, for the Canadian Screw Company. It is 100 feet from floor of boiler house to top of cope. The flue has an equal area at top and bottom of 2,116 square inches. It was designed to give draught to three boilers of 100 h. p. each, two drying ovens and four annealing furnaces. To it also was connected an 8 inch pipe from the drains. It is now working and giving perfect satisfaction. The foundations ought to be deep enough to take all the footings below the reach of frost, each course projecting beyond the one above not more than two-thirds of its own depth—thus increasing until a projection of foundation is gained beyond the line of the base of the chimney, equal to one twenty-fifth of the height of the chimney above the ground surface. This is necessary for the stability of the chimney upon a good hard bottom. On soft land or bad bottom, the area of the foundation must be increased so as to spread the weight over a surface sufficient for its support.

The strongest chimney is one built entirely with brick above a stone foundation, and the best form of plan is the octagon, the draught of which is almost as good as the circular, and the cost of building is considerably less.

In setting out the brick work, start at the top and figure downwards. If the width of the flue is less than 5 feet, then the walls of the chimney will only require to be one brick for 25 feet below the cope, and if the outside of the chimney has a batter of ¼ inch in every foot, the thickness of the walls at the base will be what they measure.

The inside face of brick work above foundation ought to be of fire-brick, carried about ⅓ the height of the chimney, and air space is not necessary, unless where a strong flame (as from wood fuel) would be constantly striking.

Finally have as few openings as possible into the chimney, and upon no consideration allow waste or exhaust steam to enter it.

NATIONAL ASSOCIATION OF BUILDERS OF THE UNITED STATES.

BOSTON, Dec. 27, 1888.

Editor Canadian Architect and Builder.

Dear Sir,—Appreciating your generous reference to the efforts of this Association to "improve the position of the master builder," I have the pleasure to forward to your address duplicate copies of the following, viz., "Uniform Contract," Forms 34, 36, 37 and 38, the latter showing our efforts to induce Associations or Exchanges throughout the United States that are not at present affiliated with us, to join our Association and send delegates to represent them at our coming convention.

Should I be able to give you any information or papers that will aid you in the establishment of a "Canadian Builders' and Contractors' Association," I will cheerfully furnish such as you may require.

We hope sometime Canada will be part of the United States, and then all your builders can join our national body.

Yours respectfully,

Wm. H. Sayward,
Secretary.

HAMILTON.

(Correspondence of the Canadian Architect and Builder.)

SO far we have had an open winter and favorable weather for all kinds of building operations, which has certainly proved a blessing to the working men in the building trades. It has enabled them to live comfortably and make up for the great loss of time in the early part of the season consequent upon the building strikes.

Reviewing the season's work, it is gratifying to see that there has been a large amount of work done in Hamilton and its suburbs, comparing favorably with the average of the past five years.

The new City Hall is roofed in, and with two weeks of fine weather, the slating will be finished. As it is all closed in, the interior work will be carried on throughout the winter, giving unexpected employment to a number of carpenters. The contractor, Mr. Piggott, deserves credit for his energy and perseverance in pushing on the work in face of the difficulties he had to contend with.

There were quite a number of fine villa residences erected here last year, varying in cost from $3,000 to $12,000, besides quite a number of smaller buildings which I have already reported, and a great many that I could not report owing to the oft repeated fact that the Hamilton building by-law is a myth—a by-law to be broken in almost every instance—as the record in the Inspector's office has not set forth one half the buildings that were erected.

This is a bad state of things, but as the members of our new City Council promise many reforms, it is hoped that during the present year builders will be compelled to comply with the law, in which case it will be a great source of pleasure to forward to your journal a correct list and description of the building operations of the city.

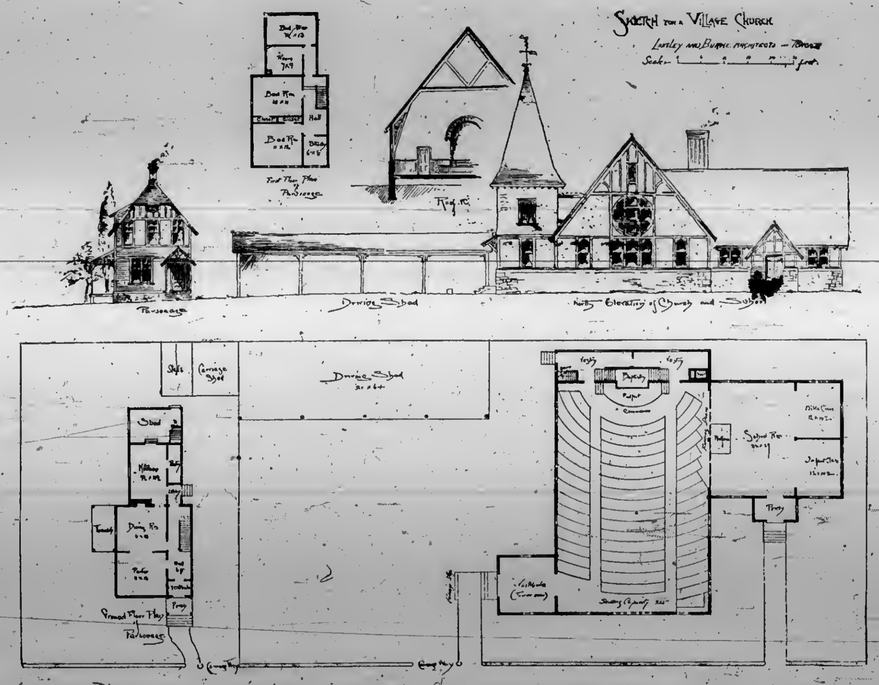
The Canadian Architect and Builder, I am pleased to know, is largely circulated here, and is well received. I would suggest that you should introduce an enquiry column in your journal, for questions and answers, so that those desiring information on any subject might avail themselves of the best means of acquiring it. There is no doubt that the well informed will willingly impart their knowledge to assist those who are seeking for information.

The Montreal Master Plumbers' Association has elected the following officers:—Chairman, Alderman V. Grenier; Vice-Chairman, James Mattison; Secretary, A. Martin; Assistant Secretary, W. M. Briggs; Committee, I. Jacotel, William Brittan, J. Sadler, P. Carroll, John Wate, J. W. Hughes; Interpreter, J. R. Savignac.

Messrs. Knox & Elliott, architects, of this city, have perfected a process by which they are enabled to make any number of copies (up to 50) of working drawings, reproducing the various colors with surprising exactness. Such a process will save at least the expense of one draughtsman, besides expediting the work of the contractors.

The criticism of American architecture, more especially the architecture of Chicago, by "Abacus," in the November number of this journal, has called forth rejoinders from several American architectural journals. The *Inland Architect* good naturedly admits that "Abacus" tells American architects and people "a great many things that it is well to heed." At the same time it takes him to task in most sarcastic language for some of his other statements.

DESIGN FOR THE PROPOSED DEPARTMENTAL AND LEGISLATIVE BUILDINGS FOR THE PROVINCE OF ONTARIO,
AS PREPARED BY MESSRS. DARLING & CURRY, TORONTO.


Sketch for a Village Church
Lovely and Burge Architects — Toronto
Scale
Ground Floor Plan of Parsonage
Parsonage
Driving Shed
Kitchen
Dining Rm
Parlour
Study
Hall
Vestry
Organ
Choir
Driving Shed
Ground Floor Plan of Parsonage
Entry
Entry

SANITATION AND HEATING

SUB-SURFACE IRRIGATION DRAINAGE.

By Edmund Burke.

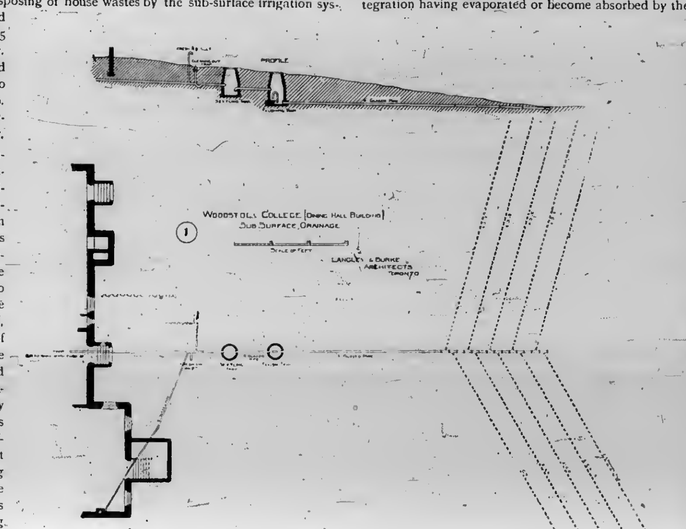
THE disposal of liquid or semi-liquid house wastes in localities destitute of sewers has been for many years a very serious problem, and more especially since civilized communities have become awakened to the necessity of sanitary reform.

In the "good old days" when the yard well was the nearest approach to a plumbing appliance, the housewife was content to throw the kitchen slops on the ground near the back door and sometimes very near the well, oblivious of the fact that the filth laden water eventually found its way into the said well, greatly to the danger of the health of the household.

A step backward was the rough stone drain leading oftentimes nowhere, each crevice holding decaying filth, the whole becoming an elongated cess-pool.

Then as plumbing appliances began to be introduced, and when no convenient water course was at hand, the leaching cess-pool was introduced, built of uncemented brick or stone and poisoning the ground with its foul filterings, generating death dealing gases, often bottled up, with their only outlet through trapless or defective fixtures.

The method of disposing of house wastes by the sub-surface irrigation system, was developed in England some 25 years since by Rev. Henry Moule, and was introduced into America by Col. Geo. E. Waring, of Newport, some years later.



The system consists in the intermittent flow and distribution of liquid sewage through open jointed porous tiles (known to us as weeping drains), into the soil at from 9 in. to 18 inches below the surface of the ground, and at intervals of about 6 feet. These pipes should be laid in rows, like a grid-iron. It is necessary that these pipes should have just sufficient fall to prevent the liquids running too rapidly to the ends of the drains and thus gorging them at these points, and causing periodical eruptions of filthy water to the surface. At the same time, the fall should be sufficient to carry the water into and along every branch, whence it will find its way evenly and rapidly into the ground; a fall of about one half an inch in 10 feet has been found to best meet these requirements.

For the success of this system it is necessary to provide: 1st, a settling tank; 2nd, a flush tank, and third, that the ground shall have the proper slope and be drained either naturally or artificially.

The settling tank is necessary for the first reception of the sewage, especially where foecal matters and deposits of grease have to be dealt with. This tank should be built of hard brick, built in cement, and plastered with the same material both inside and out. It should be extended to the surface, coped with stone, and having a durable hinged and padlocked iron lid. It has been found that the bulk of the more solid portions of the household wastes becomes reduced to liquid pulp in a few days and passes off without choking the drains.

The mouth of the outlet drain should dip several inches below the surface to prevent the entry of floating grease or solids. The tank should be of capacity sufficient for all possible demands—at the same time it should not be so large as to contain an undue amount of filth—better that it should be smaller and more frequently emptied.

An examination is required only at long intervals for the removal of possible accumulations of grease, the greatest enemy to the continuous working of any drainage system.

The flush tank is necessary to create the intermittent flow before mentioned. This tank should be of size sufficient to store and retain the accumulating wastes till the previous discharge has had time to become thoroughly absorbed by the ground. Its size should also approximate the combined capacity of the discharge pipes, so that the whole system will be filled at one discharge of the tank.

The ground should be carefully levelled off to a fall equal to that required for the drains, so that when laid they shall all be, as nearly as possible, at an equal distance from the surface.

If the soil is loamy or gravelly and a few feet higher than a water course or depression, it will not require under-drainage. If heavy clay, retaining surface waters, it will. Some sandy soils are too porous, and some clay soils too retentive, and when such is the case the lacking constituents can be supplied at a comparatively small expense. When the above requirements are taken into consideration it will be seen that considerable judgment will be called for, and that perfect success may not crown the first attempt. Dr. Pinkham, of Montclair, N. J., who, with others of that town has given the system a thorough test, says: "When organic matter is absorbed into the soil near the surface, as provided for by this system of sub-surface irrigation, coming in contact as it does, in a state of minute subdivision, with the air and condensed oxygen contained in the porous soil, it undergoes a rapid oxidation. The change which takes place is in every essential particular equivalent to that of combustion. The organic matter thus treated is just as much destroyed as if it was burnt, and the resulting products are as harmless as the products of combustion of wood or coal. Soil which has been used in this way for many years has been found to be but little changed, the liquid resultants of disintegration having evaporated or become absorbed by the roots of plants, while the solid resultants which remain, but slightly (and not in any essential particular,) differ from the original constituents of the soil."

Dr. Pinkham, again, quoting Schubler, says: "The earths possess the remarkable property of absorbing oxygen gas from the atmospheric air, a phenomenon pointed out many years ago by A. Von Humboldt. This property of the earths is confirmed almost without exception, provided they be employed for this purpose in a moist state. In the experiment which he instituted, exposing one thousand grains of different earths for thirty days in vesssels of 15 inches cubic contents (15 inches of air containing 3.12 inches of oxygen) he found that sandy loam absorbed 1.39 inches of oxygen, clay loam absorbed 1.65 inches, and garden mould 2.60 inches."

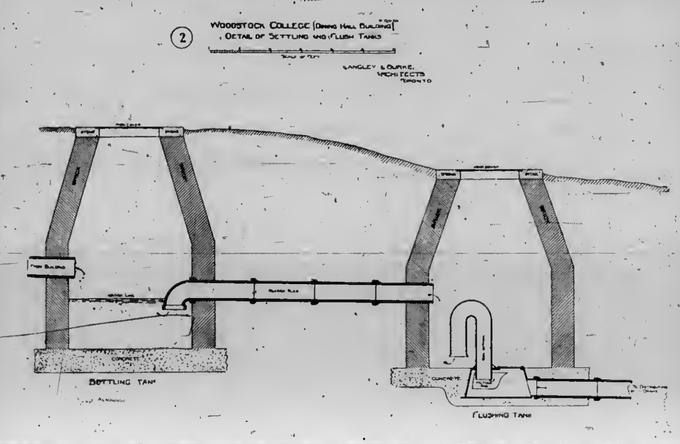
With regard to the quantity of land required for the system, Col. Waring recommends an area of 250 square feet to each person. Allowing the household a consumption of 300 gallons per day, will give 3 gallons of sewage to 25 square feet of ground. If we assume a depth of only 4 feet for soakage, this will give us 100 cubic feet of earth to filter and absorb 3 gallons of water per day.

In the experience of those who have used the system it has, when properly constructed, been a complete success.

Col. Waring says: "Seven years ago last October, when I built my present house, I applied this method there in the most thorough way, and have been watching it with great care with a view to what I might learn from it from that time to this. I do not hesitate to pronounce it absolutely perfect. I am satisfied that it affords relief which is open to every one who has even a little bit of ground adjoining his house. I would say, by the bye, that I have no water-closets in the establishment; we use earth closets only; so that my experiment has not been complicated by that element. At the same time there is no practical difficulty; there is no reason why that may not be taken care of as well as the other. The water settles through the soil, thus finding an outlet, and the soil through which it passes filters out the foul matters. Immediately the water passes away, fresh air enters from the surface, and by the well-known concentrated oxidizing power of porous matters, whether powdered earth or whatever it may be, an entire decomposition is effected of this foreign matter, so much so that after five years, there being, from defective work, an occasion to take up a part of this system of drainage, I took up the whole, and gave it a thorough examination, and in no place could you detect in the earth which lay adjacent to these tiles, in which they were immediately encompassed, either by appearance or odor, the slightest difference from ordinary fresh-smelling garden mould. This has been going on, as I say, since seven years ago last autumn, for a household of six persons, with rather a copious use of water, and there has been no other means adopted. I would not, of course, on my own single experiment, venture to recommend this, as I have done frequently, to the public as being worthy of adoption. Its use has extended very much. I applied it last year to the sewage of the whole village of Lennox, in Massachusetts; and in England it is being adopted for the sewage of country houses far and wide, and is based on the principle which is thought by many English engineers to promise the only relief that they can have from their sewage. When I am describing this, the question which is almost universally asked is, what becomes of the solid matter and grease in the settling basin? At first I used to have it taken out and buried about once in three months—dug a trench in the ground near by, cleaned out the settling basin and buried its contents in the trench. But once, only a week after cleaning it out, I had occasion to empty it again for another purpose and found that it was as foul as it had been after a longer interval. That was about three years ago. Since that time the settling basin has never been opened except for inspection, and its condition remains always the same. The explanation is perfectly simple. The solid matter at the bottom of the tank is decomposable matter, and is constantly passing itself off in solution in the water which flows away; and the matters which are decomposing are very strong producers of ammonia, which acts upon the under side of the floor of grease and converts that into soap, which in its time passes off."

James C. Bayles, author of the well known treatise on "House Drainage and Water Service," says: "Having had three years' experience with this system, so far as its essential details are concerned, in draining my new house, I have no hesitation in expressing the opinion that under favorable conditions it will work satisfactorily, and be found an improvement on any other system which can be contained within the restricted limits of a village lot or villa site."

Dr. Whitehorne, physician of the Essex County Penitentiary, says: "I would say that the fact of the utility of the system is patent, and under proper conditions is available for the healthful disposal of the sewage equally of the smallest family or the largest public institution. Before the change was made here the solid foecal matters were composted and made use of on the farm, but a large portion of the immense amount of liquid, holding noxious matter in suspension, found its way into a neighboring brook, and contaminated both the air and the running water, being perceptible as far as Caldwell village, three fourths of a mile distant. At present the solids are equally available for composting, and the saturated liquids, by means of the system of laterals, are disposed of without defiling the running water below. During summer the ground above is made use of for a kitchen garden, and produces abundantly, so that thus controlled, these elements otherwise poisonous, are made subservient to the good of man."



Mr. Edward S. Philbrick says: "There are so many places where this system is applicable, and its merits are so great in such places, that a full and detailed description of it may be of interest. The limits of its application are as follows: Wherever a quarter of an acre of grass land is available for a single family of eight or ten persons, or an acre for an aggregate of eighty persons, so situated that the surface of the sod is five feet or more below the level of the house drain, where it leaves the house or houses, this system will dispose of all their sewage in a satisfactory manner, summer and winter, with very little attention, for a term of years."

Dr. Pinkham, before referred to, addressed circulars to some sixty people who for various lengths of time had employed the sub-surface irrigation system. Their replies were satisfactoty almost to a unit.

The questions were: 1st, State size of family; 2nd, Approximate firstcost of system; 3rd, Approximate cost of annual maintenance; 4th, Length of time in use; 5th, Is system free from nuisance? 6th, Is all house waste satisfactorily disposed of? 7th, Have stoppages occurred? 8th, Is the soakage area underdrained? 9th, Is it superficially dry? 10th, Give any facts which you think may be of service in determining to what extent and under what circumstances this system can be recommended for general use.

As to question 1st, (size of family,) the answers were, "from four to one hundred and fifty"—the latter number in Essex County Penitentiary; 2nd, (first cost) ranged from $175 to $1,000; 3rd, (cost of annual maintenance,) "from nothing to $25"; 4th, (length of time in use,) "seventeen months to five years;" 5th, (Is system free from nuisance?) "Yes," unanimously; 6th, (Is all waste satisfactorily disposed of?) "Yes," in all but two cases; 7th, (Have stoppages occurred?) "No," in all but four instances; 8th, (Is soakage area underdrained?) "No," in every case but one; 9th, (Is it sufficiently dry?) "Yes," unanimously; 10th, (Give facts, etc.) all spoke most favorably, giving the system second place only to the system in vogue in regularly sewered towns. Where stoppages occurred, the replies were to the effect that it was to a small extent, and in one, "once in three years."

The accompanying cuts Fig. 1 and 2, are the plans and details of the system as adopted at the new Dining Hall Building erected at Woodstock College, and carried out by the firm of which I am a member, in the years 1886 and 1887.

The site selected for the new building is between the two old buildings and well situated for the new method of sewage disposal.

The Smead system of heating having been adopted, the "dry closet" system was introduced—conveniences being required only for the steward and servants of the institution.

The fixtures emptying into the drainage system are four sinks, five wash tubs and two baths. Water closets could also have been added if found desirable, in which case a larger and deeper receiving tank would have been required, giving a longer time for the paper and excreta to dissolve. The dining hall is planned to accommodate from 150 to 200 boarders.

No accurate data could be obtained as to the required length of drain tile which would be required. A sufficiency of ground was levelled and some 600 feet lineal of 2 in. porous drain tiles laid. This quantity proved somewhat inadequate, and an extension of about 50 ft. in length was made after one winter's trial.

The system was installed under several disadvantages, notwithstanding which it is reported as working satisfactorily, and as having solved a most perplexing problem in regard to the disposal of the college wastes.

The disadvantages above referred to were 1st, that glazed T pipes had to be used for connections to the weeping drains instead of specially made Ys.—the Y looking down stream, instead of up as in ordinary drain tiles; 2nd, the weeping drains should properly have been laid in specially made gutters of half tiles, instead of these, rough boards 6x1 inch, from 6 to 12 feet long were used; 3rd, specially made caps to cover the upper side of the joints of the weeping tiles could not be obtained in time, and in substitution, pieces of tarred felt were used, and kept in place with gravel and stone chips till the earth was filled in.

The Y pipes looking down stream receive the flow more evenly, the tendency of the flow being to pass the T pipes nearest the tank with a rush, thus gorgeing the lower end of the system.

The object of laying the weepers on a foundation of tiles or boards is to secure a more even fall, and in case of stoppage one or more pipes can be removed, cleansed and replaced, by an unskilled workman without interfering with the grading or working of the system.

The weeping drains are laid from 9 in. to 12 in. below the surface of the ground and the area is used as a lawn. No trouble in regard to frost was experienced, although the thermometer ranges several degrees lower in winter there than in Toronto.

The system as applied to Lorne Park summer resort will be illustrated in a future issue.

An English critic, writing about his visit to Toronto, calls it "a first-rate town, barring its mud, which appears to be composed of Portland cement and glue in equal proportions." He adds further: "It would, according to our notions, be an improvement to the appearance of the streets if a glimpse of the sky were here and there allowed to be caught through the fabric of electric wires which pervades the atmosphere."

DECORATION AND FURNITURE

A SAMPLE OF ENGLISH DECORATION.

A RECENTLY decorated apartment in London, which is about eighteen by fifteen, and some eleven feet high, has no moulded enrichment on either walls or ceiling, but is treated entirely with painted decoration, the color scheme of which is full of cheerful yet refined harmony.

The walls are divided in panels and stiles, reaching from skirting to cornice. The panels are flatted a delicate tone of warm or French grey, and the surrounding stiles in a contrasting tint of greenish grey. Enriched marginal mouldings and corners in "light and shade" of old-gold color, frame each panel, while a fine inner line of pure white further helps the border and assists to the appreciation of the surrounding colors.

Each panel is occupied by a masterly-painted cupid in various aerial attitudes, in direct interpretation of Mr. Ruskin's ideal—less his "vines and trellis-work"—of drawing-room decoration. In the interposing stiles of the panels a staff of gold color supported from a conventional head, is painted in combination with flowers, etc., by which means the balance is firmly preserved, whilst the hanging ribbons and encircling flowers are painted in the usual natural colors, subservient to the harmony of the entire composition of such detail. Beyond a small gold color star, placed in the top, horizontal style, immediately over each cupid, no further ornamentation of the former, is presented.

The design of ceiling consists of a large centre having a sky (Italian) painted thereon, with birds and butterflies relieving the mass of sky treatment. In each of the four pairs of side panels harmonious groups of flowers in natural colors are painted on the ground of French grey, which is common to the color of the wall panels. The stiles surrounding the side panels are in vellum with stencilled rosettes of gold color. The space between the panels last mentioned and the ceiling centre panel is in quiet buff, with the lines and ornamental breaks in flat ornament of gold color. A relief framing, also of gold color, is painted to the large centre, and the four corner medallions and an external stile of the green-grey as used on walls, surrounds the whole design.

In the corner medallions are represented the four seasons, by allegorical studies of female heads, painted in natural color against blue background.

Marginal lines of old gold and subdued blue are used generally throughout the ceiling, and the remaining detail of ornament connected therewith is rendered flat and in gold color.

The cornice is finished in greys, vellum, and white, assisted with a little gold and positive color.

The woodwork is finished in flatting and decorated as follows: The panels of door, etc., are left with a background of vellum color; the stiles and remaining wood work in the green grey tint used for the wall stiles. Upon the top long panels of the door, which has four panels, ornament somewhat similar to that on the wall stile is painted in a highly finished manner, whilst the lower panels are occupied with representations of musical instruments usual to the Italian style. The panel mouldings are finished in the French grey, and part gilded, by which introduction of gold the panels are effectively framed, and additional richness given to the door in its entirety.

An Ottawa despatch of the 10th inst, says: Messrs. T. Turnbull and W. C. Trotter, of Montreal, interviewed Hon. Mr. Bowell to-day on behalf of the Standard Drain Pipe Co. of St. Johns, Que., to urge a change from *ad valorem* to specific duties on certain classes of drain pipes which now bear a duty of 35 per cent. *ad valorem*, on the ground of fraud and undervaluation, and in order to keep out of Canada what has proved to be an inferior article.

A Pittsburg man has invented a glass conduit which he thinks solves the problem of underground electric wires. Plates of glass are grooved on the upper surface, and the wires are laid in the grooves and cemented with pitch. Then other plates of glass are laid over the first, and wires put upon them in the same way. When all the wires are laid the whole is inclosed in a wooden box and embedded in cement.

MANUFACTURES AND MATERIALS

THE SEWER PIPE CONTROVERSY.

THE *Canadian Manufacturer*, in its anxiety to make a point against this journal and in the hope of securing an extra advertisement or two for its pages, assumes, unasked, the position of a modern Falstaff in defence of the manufacturers of Canadian Sewer Pipe, who, when occasion demands, are abundantly able to defend themselves. It is apparent from the manner in which our contemporary misrepresents our position, which we so clearly defined on a previous occasion, that it has no intention of carrying on its part of the discussion with conscientious fairness. For this reason, and because we should be loth to deprive our Fallstaffian neighbor of the satisfaction he evidently finds in knocking down men of straw which he has himself set up, we shall leave him to his unenviable occupation. The following extract from a letter received a few days ago from the President of the Standard Drain Pipe Company, of St. Johns, Que., shows (1) that the parties most deeply interested in this controversy, the Canadian Sewer Pipe Manufacturers, admit the fairness of the treatment accorded to them by this journal, and (2) that their would-be champion has not only spent his labor for naught, but made himself ridiculous into the bargain:

"ST. JOHNS, Q., Dec. 29, 1888.

C. H. MORTIMER, ESQ.

Dear Sir,— * * * I am much obliged to you for having given me an opportunity to plead our cause in the columns of your paper, *and the explanation of the stand you took is satisfactory*. Probably being so much interested in the question I did not fairly weigh it at first. Wishing you the compliments of the season and increased prosperity,

Yours faithfully,

W. C. TROTTER."

BLACK ROCK, Dec. 20th, 1888.

Editor CANADIAN ARCHITECT AND BUILDER.

IN the December number of your paper a paragraph appeared headed "Thickness of Sewer Pipes." The opinion of Engineer Rust is given as to proper thickness, etc., and he is also quoted as saying that "the American pipe at present in use in Toronto is hardly up to this standard." This is no doubt true as to most of the pipes being used in your city, as but little of our pipe has been used this season, but we wish to state that our make is fully up to Mr. Rust's standard of thickness, as the samples in the City Engineer's office will show. Will you kindly give this the same prominence in your next issue as the above quoted article had in the December number, both in justice to ourselves and the dealers who have favored us with their orders.

Yours very truly,

N. C. BARNUM,

Secretary Buffalo Sewer Pipe Co.

TO MAKE A DRAWING BOARD THAT WILL NOT WARP.

726 121st STREET, N. Y. CITY, December 21st, 1888.

Editor CANADIAN ARCHITECT AND BUILDER.

Sir,—In answer to the request of Mr. Baillarge, for a board which will not be likely to warp, I submit the following. It is made of three ¼ inch thicknesses of pine and butternut, laid alternately as follows:

The middle thickness is first either glued together in four 12 inch widths of pine with square edges, or in narrow 2 inch widths of ⅜ inch tongued and grooved stuff, then the bottom layer glued on diagonally, as shown

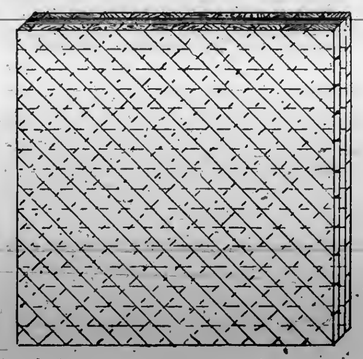


FIG. 1.

in the sketch I send enclosed. When this is perfectly set, the top layer can be glued on. After the glue has set, the whole ought to be cleaned off perfectly out of wind and straightened across so that a chalked straight edge

will touch any part of the surface. The edges should next be straightened and squared. After all this has been properly done it would be well to further guard against warping, by plowing the edge with a quarter bit all round and glueing on a tongued and mitred batten in the way shown by

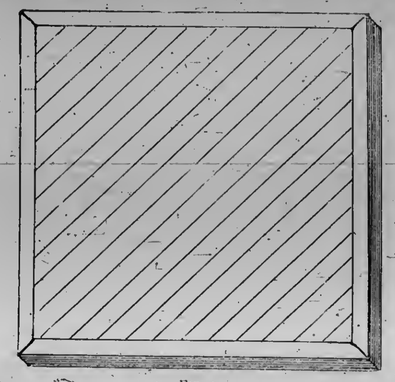


FIG. 2.

Fig. 2. If this be not sufficient to prevent its warping, ledgers can be screwed across the back, but the above ought to give a firm unyielding surface, that is, if the work on it be properly done.

Yours truly,

OWEN B. MAGINNIS.

Editor CANADIAN ARCHITECT AND BUILDER.

Replying to the inquiry in the CANADIAN ARCHITECT AND BUILDER for December, "How a board 4 feet square by 1 inch thick, can be made so it will not warp," I would submit the following:

While seemingly a very simple thing, it is often a troublesome thing to make a board with the required surface and so little thickness, which "will not warp." I do not think it adds very much to the certainty of a board staying true and out of wind to "build it up" from small thin strips, or thin layers crossing each other, as I have seen some boards made in that way develop a tendency to warp as badly as any. Such a construction is much more expensive than some other ways which will secure equally as good results.

For such a board, I would recommend pine, perfectly seasoned and clear, not less than ⅛ inch thick, in strips 4 inches wide, grooved and tongued together. These strips should be ploughed or grooved on the back or under side one inch from each edge, with a groove ½ inch wide, and one half the depth.

In addition to this, the surest protection against warping is to put cleats on the back, made of hardwood, fastened with screws, the screw holes through cleats being somewhat elongated as slots to allow for any shrinking or swelling in the width of board. If it is necessary or very desirable to do away with cleating on back, I should put battens 2 inches wide, same thickness as board, across each end, grooving and tongueing same. All joints should be well glued.

If California redwood was available, I should much prefer it to any other lumber, as it is perhaps the least likely to shrink, swell or warp. With this lumber, 4 boards 12 inches wide, well jointed and battened across ends, simply glueing without tongueing, would give as satisfactory results as a more expensively made board from many other kinds of lumber.

A. D. WASTE.

The Yorkville and Carlton Brick Company, Toronto, recently shipped a carload of Canadian-make bricks to Mr. J. Andrews, Norwalk, California, via the Canadian Pacific Railway.

The new building for the Manual Training Department of Woodstock McMaster University, will be of white brick, 32 x 80 feet, two stories high, and will contain rooms for classes in drawing, carpentry, wood turning, wood carving, blacksmithing, and a machine shop. It is to be completed by May 1st.

PUBLICATIONS.

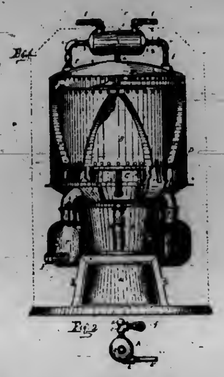
We beg to acknowledge receipt of an attractive calendar sent out in the interests of the Standard Drain Pipe Co., of St. Johns, Que.

We are indebted to the publishers of the *Monetary Times* for a useful souvenir in the shape of a letter-opener made of celluloid, and bearing the motto, "After opening your letters by means of me, let promptness in answering your motto be."

RECENT CANADIAN PATENTS.

Combination Steam and Hot Air Heater.

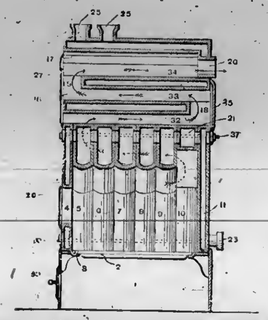
No. 29,900. The J. F. Pease Furnace Co., Toronto, Ont. (assignee of John F. Pease, Syracuse, N.Y., U.S.,) 19th September, 1888; 5 years.



Claim.—1st. The within described low down combination steam and warm air heater, having the boiler B within the combustion chamber over the fire-pot, and the combustion chamber of greater diameter than the fire-pot, all substantially as and for the purpose set forth. 2nd. The combination of the fire-pot, with the upwardly flaring section between the fire-pot and combustion chamber, the combustion chamber of greater diameter than the fire-pot, a steam boiler within the combustion chamber, and suitable steam and warm air connections, all substantially as described and for the purpose set forth. 3rd. The combination of a fire-pot, with a radiator surrounding or partially surrounding the same, a combustion chamber connected to the fire-pot by a flaring section mounted on the fire-pot, the combustion or smoke flues leading from the flaring portion of the combustion chamber into the radiator, substantially as specified. 4th. The combination of the fire-pot and combustion chamber, with a steam boiler located within the combustion chamber, having a steam dome located within the outer casing of the heater, and outside the combustion chamber, substantially as described and shown. 5th. The steam dome A connected with the boiler B by suitable steam connections, and having a return drip pipe to return the water of condensation to the boiler, in combination with the combustion chamber of a warm air furnace, substantially as shown.

Hot Water Boiler.

No. 29,705. Charles E. Gate, Winnipeg, Man., 21st August, 1888; 5 years.



Claim.—1st. A combination hot water boiler having the peculiar form of the vertical sections 5, 6, 7, 8, 9 and 10, the front 4, back 11, the water way connections 21, 21, with stoppers 23, 23, and bolts 37, 37, combined with the frame 1 forming ash pit bars, 2, 2, lips 3, 3, door 30, the furnace 36, door 29, apertures 12, 12 and 14, 14, twin flues 31, 31, twin flue doors 28, 28, return pipe 26, or more in number, placing either at back or sides of both, substantially as and for the purpose above set forth. 2nd. A combination hot water boiler having the peculiar form of the horizontal section 15, 16 and 17, having their under sides corrugated as shown or plain, the apertures 18 and 19, the smoke chambers 32, 33, 34, exit 20, doors 27, 27, service flow pipes 25, one or more in number, movable back 35, the vertical water way connections 22, 22, the stoppers 23, 23, and the bolts 24, 24, substantially as and for the purpose set forth. 3rd. A hot water boiler composed of a combination of vertical and horizontal sections, substantially as and for the purpose above set forth.

The contract for the Teeswater, Ont., water works, has been let to Myles, Hunting & Co., of Hamilton. The pumps will have a daily capacity of 600 gallons.

CONTRACTS

CONTRACTS AWARDED.

J. P. Elford has been awarded the contract for the Jubilee Hospital, Victoria, B. C., at the price of $50,558.

Mr. Sam. Flory has been given the contract for brick work on the new addition to the McClary works, London, Ont.

The contract for the enlargement of the Cobourg post office building to cost $8,000 has been awarded to H. & J. Henderson, of that town.

Contracts have been awarded as follows on the Hotel Dieu Hospital building, Windsor, Ont.; brick and stone work, H. Resume; carpentering, Henry Walker; roofing and trimming, Neveux Bros., and heating, Purser & Son.

Mr. S. A. Ross, of Cornwall, who has been given the contract for the construction of new locks on the Cornwall canal, is entering with vigor upon the work. The material will be got out this winter, and if the weather should prove favorable, excavating will be commenced. The total stone work is estimated at about 46,000 yards, and the total excavations about 10,000 yards.

CONTRACTS OPEN.

WINNIPEG, MAN.—A Congregational Church is to be erected here.

TEESWATER, ONT.—An electric light system is to be established here.

GALT, ONT.—A block of stores to cost $10,000 are to be erected here.

REGINA, N. W. T.—A new school house to cost $13,000 is to be erected.

WHITBY, ONT.—The Board of Education talks of building a gymnasium.

TORONTO, ONT.—Ald. Boustead will build a $14,000 residence on Bloor street.

INGERSOLL, ONT.—The C. P. R. will build a station and warehouse at a cost of $10,000.

PICTON, ONT.—Improvements to the Cardwell House are to be made, at a cost of $7,000.

KINGSTON, ONT.—Improvements are to be made to the Sharbot Hotel, at a cost of $7,000.

LONDON, ONT.—For particulars of tenders wanted, see London correspondence in another column.

LONDON, ONT.—The C. P. R. ask tenders for grading 110 miles on their proposed new line from this city to Detroit.

KINGSTON, ONT.—Tenders will be asked for the completion of the tower of St. Mary's cathedral. The intention is to add ninety feet to its present height.

CALGARY, N. W. T.—Mr. T. C. Keefer, C.M.G., of Ottawa, has been asked to prepare plans for the proposed water works.

WESTMINSTER, B. C.—A handsome brick block is to be erected by Mr. Wolfe, on the site of the old Caledonia Hotel building.

QUEBEC.—Plans have been submitted for a new hotel with 250 bedrooms, to be erected on the site of the old Parliament buildings, at a cost of $200,000.

STRATFORD, ONT.—$6,900 have been collected for the erection of a county and city general hospital, and it is said the work of construction will shortly be commenced.

OTTAWA, ONT.—The Minister of railways is said to have decided to build a steel bridge, costing half a million dollars, over the Grand Narrows, on the line of the Cape Breton railway.

NIAGARA FALLS.—The upper Suspension bridge, which was destroyed by a wind storm a few days ago, is to be rebuilt at once, with new materials. For particulars address Chas. Smith, Clinton, N. Y.

ELECTRICITY FOR LIGHTING DWELLINGS.

IN a recent address before the Society of Arts, London, Mr. W. H. Preece, a well-known expert, speaking of the matter of expense, referring to the glow-lamp of Edison, said that the "commercial out put has been increased six times, while its cost has been diminished eight times." He further shows how the machinery, such as the steam engine for this purpose, has been greatly improved. He claims that in the general post-office, London, the light from the electric glow-lamp cost twenty-two shillings as against the gas-lamp at eighteen shillings per annum. In referring to its hygienic value from a purely mercenary standpoint, he says: "In our Central Saving Bank in London it has been found, after two year's experience of electric lighting, that the average amount of absences from illness has been diminished by about two days a year for each person on the staff. This is equivalent to a gain to the service of the time of about eight clerks in that department alone. Taking the cost at the 'overtime' rate only, this would mean a saving in salaries of about £640 a year. The cost of the installation of the electric light was £3,349, and the annual cost of working £700 per annum —say a total annual cost of £1,034. The cost of the gas consumed for lighting pur-poses, was about £700 a year, so that on a whole there was a direct saving of something like £266 a year to the government, besides the material advantage of the better work of the staff resulting from the improved atmospheric conditions under which their work is done." The general advantages of system has been so fully recognized, according to Mr. Preece, that "our admiralty have been foremost in this work. All our war-ships are gradually receiving their equipment. Our ocean-going passenger ships are also so illuminated.

MONTREAL ICE PALACE.

MONTREAL is to have another winter carnival next month, and (weather permitting) an ice palace as the principal attraction. The designs for the palace have been prepared by Messrs. E. C. Hopkins and J. A. Radford, architects, of that city. A correspondent reminds us that Catharine of Russia was the first to show to the world the possibility of erecting such a structure, and quotes in this connection the following lines of Cowper:

"No forest fell,
Imperial mistress of the fur-clad Russ!
When thou would'st build; no quarry sent its stores
To enrich thy walls; but thou didst hew the flood,
And make thy marble of the glassy wave."

For more than a century and a half no attempt was made to rival the structure of the Russian queen. A few years ago, however, at the suggestion of Mr. R. D. McGibbon, of Montreal, the idea of a winter carnival and ice palace was successfully carried out, and has been as successfully repeated on several occasions since.

INTERIOR OF LIBRARY, OSGOODE HALL, TORONTO.

SUPPLEMENT TO
CANADIAN ARCHITECT AND BUILDER
VOL. II, No. 1.

CUMBERLAND & STORM,
ARCHITECTS

CANADIAN ARCHITECT AND BUILDER

FINE AND INDUSTRIAL ARTS · DECORATION · FURNISHING
CONSTRUCTION · SANITATION · ENGINEERING

VOL. II.—No. II. TORONTO, CANADA, FEBRUARY, 1889. PRICE 20 CENTS $2.00 PER YEAR.

—THE—
Canadian Architect and Builder,
A JOURNAL OF MODERN CONSTRUCTIVE METHODS,
PUBLISHED MONTHLY IN THE INTEREST OF
ARCHITECTS, CIVIL AND SANITARY ENGINEERS, PLUMBERS, DECORATORS, BUILDERS, CONTRACTORS, AND MANUFACTURERS OF AND DEALERS IN BUILDING MATERIALS AND APPLIANCES.

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SUBSCRIPTIONS.

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In ordering change of address give the old as well as the new address. Failure to receive the paper promptly should be reported to this office.

ADVERTISEMENTS.

Prices for advertising sent promptly on application. Orders for advertising should reach the office of publication not later than the 12th day of the month, and changes of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

THE "CANADIAN CONTRACTOR'S HAND-BOOK" NOW READY.

WE are pleased to be able to announce that the "Canadian Contractor's Hand-Book," compiled and published as a premium to new subscribers to the CANADIAN ARCHITECT AND BUILDER, is now ready for distribution to those entitled to receive it. Following is the table of contents :—

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The "Canadian Contractor's Hand-Book" is handsomely bound in leather, is of convenient size for carrying in the pocket, and contains receptacle for money or memoranda. It is generally admitted by those who have seen the book that it is in itself well worth $2 to any contractor. In fact the "wages tables" alone are worth many times that amount to a contractor employing a number of workmen. Contractors and builders are invited to send us $2 and receive a copy of the "Canadian Contractor's Hand-Book" and the CANADIAN ARCHITECT AND BUILDER for one year.

WE regret that by a transposition of figures an error occurred in Mr. Knox's article on "Factory Chimney Construction" in our last number. In the fifth paragraph, read : "for a chimney 100 feet high, multiply by 12 ; for a chimney 120 feet high, multiply by 11."

THE *American Architect* publishes a protest against unfair architectural competitions, which bears the signatures of architects from various parts of the United States and Canada. In view of recent events in this country, Canadian architects have the best of reasons for joining in such a protest.

THE courts have imposed a fine of $1,000 upon the city of London, Ont., for allowing its sewage to empty into the river. This decision should serve as a warning to Toronto and other Canadian cities which have been dallying for years with the question of sewage disposal, and apparently are as far as ever from a satisfactory conclusion.

THE Minister of Public Works for Ontario, stated in the Legislature the other day, that the amount expended on the new Parliament Buildings, up to the close of last year, was $308,646, made up as follows : masonry, $244.353 ; carpentry and iron work, $8,531 ; brick, $12,037 ; St. Lawrence Foundry Co., $10,019 ; Mr. Waite, architect, $12,500 ; drainage, $21,265.

WE have received from a well-known New York architect a request for a copy of an illustration of Mr. Waite's design for the new Ontario Parliament Buildings. Our correspondent adds to his request the following : "I want to compare it with Darling & Curry's beautiful design, which you published." We regret that we were compelled to reply that we had unsuccessfully endeavored to obtain from Mr. Waite the privilege of illustrating his design.

HAVING been requested by several of our subscribers to open a column of "Queries and Answers" on subjects connected with the building trades, we beg to inform our readers that we have made the necessary arrangements, and that in future we will publish each month, under this heading, such questions and answers on these subjects as we may receive. We leave it to our subscribers themselves to make this column a success. We feel sure that those who know will gladly assist those who want to know.

THE Toronto Board of Trade has accepted the amended designs of Messrs. James & James, of New York City, for its new building. These amended designs are published in the present number. We very much regret that Messrs. James & James have declined to allow us to illustrate their original competition design. We must allow them to be the judges of the

merits of their original design, and if they do not think that it is worthy of illustration, we can only sympathize with them, while making the best of our disappointment at not being able to present to our readers all the competitive drawings as we were desirous of doing. In future numbers we shall publish the premiated Canadian designs by Messrs. Darling & Curry and Gordon & Helliwell, of Toronto.

JUDGING from letters which we have recently received from builders in different parts of Ontario, there seems to be an earnest desire on the part of many of our readers for the formation of a Canadian Builders' and Contractors' Association. We are pleased to observe that such a feeling exists, as we believe the time has come when such an organization is necessary for the protection of the rights of master builders and the advancement of their interests. It is time that a standard form of contract applicable to Canada and for use throughout the Dominion, was agreed upon and put in operation. The relations of the builder to the architect require to be more clearly defined and better understood. The relations of master builder and workmen employed in the building trades have in recent years been anything but satisfactory. In connection with all these matters, as well as in the influence it could bring to bear on the shaping of legislation, whether municipal or provincial, a strong organization of Canadian master builders might work with very great advantage for the interests of its members. We hope that, as suggested by one of our correspondents last month, a meeting will be called at an early day for organization. We shall be pleased to do anything we can to aid the object, and as a preliminary step would like to receive for publication the opinions of any builder who has anything to say for or against the project.

THE Ontario Legislature has been asked to amend the Mechanics' Lien Act in such a manner as to afford greater protection to mechanics. We notice that in Minnesota it is the mortgagee who is alleged to be suffering from the combination against him of "rascally owners and builders." An article in one of our contemporaries goes to show, however, that the owners have as good cause to complain of the provisions of the law as the other parties affected by it. The writer says :—"It may surprise a good many people to know that when once you have bargained to have a job done about a building you occupy, and may have paid for, the mechanic who makes the bargain with you has the right to go at once and put a lien on the building, and that before he has done a single stroke of work. His contract may be for a few hundred dollars only, and your building may be worth fifty thousand, but he can so far destroy the value of that building to you, for selling or other purposes, until his claim has been satisfied, which may not be for months. He may send you in what seems to you an extortionate bill, making charges away beyond the contract figures, and which you don't feel inclined to pay without showing fight. Until the matter is settled, however, that mechanics' lien clings like a nightmare to the value of your building, and you might very easily be paralyzed in your efforts to sell it, should you think it desirable or necessary at any time to do so, for months or even years. Ask any reputable lawyer of your acquaintance, and if he does not tell you what infinite botheration may be caused by Mechanics' Liens, we shall be surprised."

IN view of the many accidents which have occurred on account of insecure scaffolding, the City Council of Toronto is considering the appointment of an official whose duty it shall be to see that all scaffolding is constructed in a manner to ensure the safety of the workmen who may be employed upon it. No doubt the proposed new inspector will find enough to do, if he determines to faithfully fulfil the objects for which he is to be appointed. We trust if the appointment is made, the inspection of scaffolding will be done in a more satisfactory manner than the present inspection of new buildings. The number of examples of faulty and even dangerous construction to be seen on the streets of Toronto, is truly alarming. We could point out to the Building Inspector as one such example a pretentious store building in course of erection on Queen street, in which the weight of intermediate brick piers of the upper stories are carried on wood beams which plainly indicated their inadequacy by the graceful curves they assumed on the lower surface. Another instance may be seen on Dundas street, where turned hard wood columns about 5 inches diameter, painted to look like iron, carry the wood beams which carry the brick walls above. We do not know whether the blame for the existence of such a state of things should rest upon the Building Inspector or upon the City Council. It is not improbable that the Building Inspector has too much to attend to. If this be so, he should either be relieved of some of the duties which do not properly belong to his office, or the Council should appoint an additional inspector. There is need for the prompt inauguration of a more thorough system of inspection of new buildings, which if not entered upon and carried out, will result some day in disastrous consequences similar to those which have occurred in New York and other cities owing to ignorance and criminal carelessness on the part of those engaged in building construction.

WE believe the Board of Works of the city of Toronto has taken an unwise and retrograde step in deciding that in future no pipe sewers shall be laid, but that all sewers shall be brick. This opinion is shared by every engineer to whom we have spoken on the subject. It may be that brick is to be preferred to pipe for sewers of 18 inches diameter and upwards. For sewers of smaller diameter, there can be no doubt that pipe of good quality serves the purpose better, and is much less costly. The recent investigation as to the condition of the pipe sewers of the city tends to bear out this statement. We quote from the City Engineer's report as to the character and result of this investigation : "At the last meeting of the Committee on Works I was ordered to stop work on all the pipe sewers now under construction, on account of statements having been made that a certain class of pipe now being used by the city was defective ; and in order to test the matter, I was ordered to open a number of sewers built at different dates throughout the city: For this purpose trenches were sunk at several places throughout the city, 24 openings being made in the streets. On Tuesday and Wednesday the Committee on Works examined these sewers. As far as the examination goes the testing was confined to two qualities of pipe—one manufactured in England, and known as the Scotch pipe, and the other manufactured in the United States, by different manufacturers. Altogether we uncovered for the inspection of the Committee on Works 140 pipes, and of these, three Scotch pipes were found defective and fifteen American. This is not however, a fair test of the quality of the pipe—the openings for the American pipe being more numerous than those for the Scotch pipe ; and further, it is a most imperfect test as to the quality of either pipe. The total number of openings made was 24 ; the greater number of these openings being made at such places where it was known the defective pipes would be found. As to the cause of the defects, it is difficult to decide ; but I am inclined to think that the defects found in the sewers were caused by the removal of the shoring ; as by its removal pipes were broken by having no support at the haunches, and with a sufficient load would be very liable to give way. The shoring at the present time is done by short lengths of timber. The lower portion can now be removed and the sewer properly strengthened by filling in at she haunches, thereby securing the pipe from any unreasonable strain." It will be seen that the inspection revealed very few defective pipes, and in many instances the defects discovered were not due to the quality of the pipe, but rather to the unfair strain to which they were subjected owing to the want of proper support. There was nothing revealed by the investigation tending to show the inferiority of pipe sewers. On the contrary, the evidence is strongly in favor of their continued use, and we are at a loss to understand on what grounds the Board of Works based their decision, especially in view of the Engineer's statement, that it was "*a most imperfect test as to the quality of either pipe.*"

There are several reasons why pipe is preferable to brick for sewers of moderate diameter. Being salt-glazed, it is smoother than a brick sewer, and, unlike the latter, offers no obstruction to the flow of the sewage. It is not, like a brick sewer, porous, and consequently is less liable to leak. It will compare favorably in point of durability with brick. In conjunction with the various points of superiority mentioned, is the important consideration that a pipe sewer which can be laid for $4 per yard, will cost $6 per yard if laid with bricks. In other words, it will cost the citizens of Toronto about $25,000 more to construct the same number of miles of brick sewers as were constructed with pipes last year, and with no better results so far as the quality of the work is concerned. It remains to be seen with what grace the tax-payers will submit to such unwise expenditure.

This would seem to be a fitting place to remark that the time has come when the opinion of the City Engineer in matters of this kind should be supreme. If the City Engineer is a competent man, his opinion on such subjects should decide the course to be pursued. If he is not a competent man, and his opinion is of less value than that of the aldermen whose adviser he is supposed to be, then the city might as well dispense with such a useless official and save the amount of his salary. We do not wish to be understood as casting any reflection upon the abilities of the present City Engineer. We simply contend that as the head of the most important department of the city's affairs, his opinions should prevail, and not be subject to revision at the hands of the aldermen. Then, if it is found that the Engineer's opinions do not work out satisfactorily in practice, it is an easy matter to place the responsibility for mistakes where it properly belongs.

PUBLICATIONS.

OUR New York contemporary, the *Manufacturer and Builder*, has donned a new cover, pleasing in design and color, and in many other ways is showing evidences of enterprise and prosperity.

With the new year, *Grip* enters upon its thirty-second half-yearly volume, a fact which speaks eloquently for the merits of this unique and favorite Canadian journal. It stands to-day alongside of the very best productions of its class in the world, and enjoys a fame far beyond the bounds of Canada. To Canadians it ought to be more and more an object of patriotic pride. It is only two dollars a year, although the paper contains sixteen pages filled with bright original humor of pen and pencil, and always gives, without stint, political cartoons on passing events. *Grip* is now giving the Manhattan Art Company's superbly engraved copy of Rosa Bonheur's celebrated picture, "The Horse Fair," to all new subscribers.

A DOMINION ARCHITECTURAL ASSOCIATION.

QUEBEC, Jan. 29, 1889.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—Reading in your valuable journal of the Architect's Guild of Toronto, and of a proposal to form a Provincial Society of Architects, suggests a wider application of so excellent an idea in the formation of a Dominion Society, which might be made a most useful organization in advancing the interests of architects, and those of the profession as well. It is to be regretted that so far no Society exists for the bringing together of Canadian architects, or for the securing of any uniformity in practice, fees, etc., nor for the systematic training of young architects. I hope the Toronto Guild may take hold of this matter. With the energy characterizing your citizens generally applied in the direction I have hinted at, success I am sure would be certain.

Yours truly,

H. STAVELEY.

Bruce & Thompson, of Glasgow, have been making some experiments on the pressure necessary to be acquired before lead pipes burst. Their results show dissimilar conditions for different sized pipes. The pipes used by the Glasgow water works are not selected by their strength or quality, but according to their weight per lineal yard. One-half inch pipe runs 7 lbs. per yard, and 1½ inch pipes 24 lbs. per yard. In a ½-inch pipe the bursting pressure per square inch was found to be 1,820 lbs. In a 1½ inch pipe the bursting pressure was 812 lbs. per square inch.

A WINNIPEG COMPETITION.

WINNIPEG, Feb. 7th, 1889.

Editor CANADIAN ARCHITECT AND BUILDER.

You will see by the enclosed cutting from the *Call*, how the architectural profession is treated in this city :

"A meeting of the market, license and health committee was held on Wednesday afternoon, Ald. Currie presiding. The time of the committee was wholly devoted to a discussion on the new city market building, and the aldermen expressed their opinions pretty freely. The principal point of contention was regarding the advisability of having a public hall in the building. The chairman strongly favored the public hall scheme, and expressed the opinion that it would pay the city at least ten per cent. on the investment. It was pointed out that if there was to be a public hall, the brick portion of the old market building saved from the fire could not be utilized, as had been proposed, but would have to be torn down. The cost of the new market if this was done, it was stated, would not be less than $25,000, while if the public hall scheme was abandoned and the building now standing utilized, the cost would not be more than $13,000. Finally it was decided to advertise for separate competitive plans and specifications with and without a public hall. The dimensions of the building with the hall would be 164 x 63, and without it 117 x 63. The architects submitting plans must furnish a statement of the cost, including excavations. For the plan adopted, if it be for a building with a public hall, $100 will be paid, and if without it, $50, in either case the plans to become the city's property."

I should be very much obliged if you would write an article on this subject.

Yours truly,

WINNIPEG ARCHITECT.

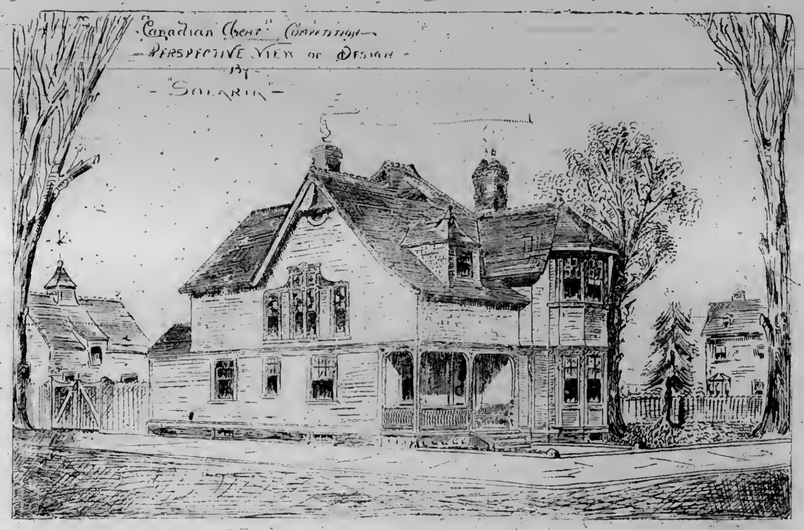
[Here is another competition which is even worse than those referred to last month. The committee is in doubt, and is unwilling to decide a point without more information. But instead of gaining the information in a legitimate way and paying for it, it proposes to obtain what it so much desires by trying to induce a number of men to send in drawings for two schemes, either or neither of which may be adopted. The inducement is not even the carrying out of the work whichever scheme may be adopted ; but the magnificent sum of $150 in two prizes. This committee must have a very poor opinion of the architects they come in contact with, or have no knowledge of the quantity of work which must be done to prepare the design for which they offer the great prizes of $100 and $50. The value of the buildings is placed at $25,000 and $13,000, which equals $38,000, and if five designs are sent in $1,900 worth of work is done for $150. The man winning first place only receives a sum a little over one fourth of what he is entitled to, and even then he is relieved of his plans. The way to stop these competitions is for architects to refuse to enter them, and to do all in their power to prevent others entering them. Of course in the present condition of the profession, any man who can draw a little is an architect in the opinion of the ignorant, and consequently there will be designs sent in, by men called architects no matter how absurd the conditions may be. The public is to blame from the fact that it is unable to judge in architectural matters, and will persist in deciding matters artistic, without the aid of competent advice. We should very much like to have the names of any men who may send in designs in response to such conditions as above. We should imagine that they must be very anxious to work for nothing or are extremely thankful for small mercies.—THE EDITOR.]

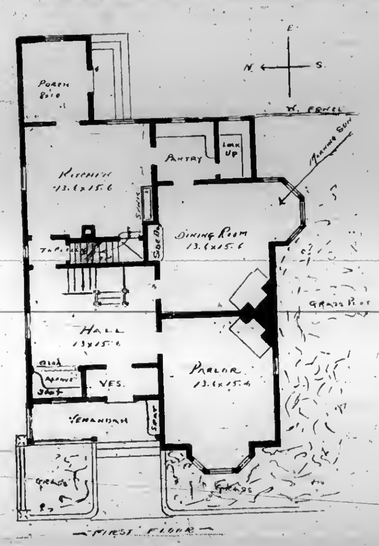
To make size for wall paper, break some glue up small, put it into a pail and cover the glue with water, and allow it to soak for ten or twelve hours ; then add more water and boil until dissolved. Strain it through a muslin cloth, and try the size on a piece of paper. If it glistens it is too thick ; then add water. If it soaks into the paper it is too thin. Be careful, especially in the first coat, to bear very lightly upon the brush, and have plenty of size to flow freely from it, otherwise you may damage the paper. Give two coats of this, and when dry varnish with pale varnish, which should be applied very briskly, and leave off at the flow.

OUR ILLUSTRATIONS.

"CANADIAN ARCHITECT AND BUILDER" COMPETITION FOR A $2,500 TOWN HOUSE—DESIGN BY "SOLARIA."

THIS plan has been prepared for a northeast corner instead of a northwest one, and is consequently not to be judged from the same standpoint as the other designs. For a northeast corner the house has been properly designed. The dining room is





very well planned, although it would not have the benefit of the early morning sun; the bay window, however, would catch the rays of the sun as soon as the sun arrived on a direct line with the north side of the house. The recess for the sideboard is too short, and if one were built for the position, it would be out of scale. We should have planned the bay window in the parlor on the north side, and not given it a western exposure, which in summer is very warm, and in winter equally cold. The vestibule is very bad, being too long and too narrow, and the alcove has not been made of much benefit either in a utilitarian or ornamental way. The vestibule should have been six or twelve inches wider and two feet shorter; the alcove would also have been improved by this change. The hall is very roomy and convenient, but has been completely spoiled in appearance by there turn flight of the main stair. The method of making one of the main stairs for a portion of the servant stair is bad. The servants in passing across the landing would have a view of the main hall. The kitchen, serving pantry, etc., are well arranged, and the large porch would be very useful for many purposes.

The first floor plan is bad, in fact it could hardly be worse. There are only two good bed rooms, each with a closet. What we said of the bay window in the parlor applies to the one in the front bed room. It was also possible to have gained access to this room without ruining the other front room, by slightly changing the position of, and making the closets wider and shorter, so as to have given a lobby from which the front room could have been reached. The bath-room could not have been worse arranged. If a door had been placed where a curtain is marked, and an arch put in where the present door is shown, a wardrobe or chest could have been gained. But even if the best that could be done with this floor had been done, it would still have been far from what a bedroom floor should be. The elevations are very good—that is, if they were put in the hands of an experienced man and improved in the detail, the result would be good. The plan and elevation shows an hand inexperienced hand, and one whom we should judge had never been in an architect's office. The drawing is very bad; it cannot be called drawing, it has been so carelessly done. However, we have no doubt that the design was not prepared by one who has had a fair opportunity of learning drawing, and it is very possible that the author deserves praise for his perseverence rather than censure for his shortcomings.

ACCEPTED AMENDED DESIGN FOR TORONTO BOARD OF TRADE BUILDING.—JAMES & JAMES, ARCHITECTS, NEW YORK.

SUGGESTED SKETCH FOR MANTEL.—J. A. RADFORD, ARCHITECT.

A lump of soda laid upon the drain-pipe down which waste water passes will prevent the clogging of the pipe with grease, especially if the pipe is flooded every week with boiling water.

Mr. E. W. Keating, City Engineer of Halifax, N. S., has patented a device for cleaning water pipes. The cost of cleaning the twenty-four-inch and fifteen-inch mains of that city last year is said to have been only $27.68.

RESPONSIBILITIES OF STUDENTS.

ABSTRACT OF LECTURE DELIVERED BY R. W. GAMBIER-BOUSFIELD, ASSOC. R. I. B. A., TO THE STUDENTS AND DRAUGHTSMEN'S ASSOCIATION OF TORONTO.

"FOOLS build houses for wise men to live in" is an old saying, and as very many people translate it, it is a bad thing for the livelihoods of you and me. It certainly is a fact that fools build houses—fools do a great many sensible things—but it does not at all follow that everyone is a fool who builds a house, whether he is the proprietor or the architect. But, let me tell you, proprietors and architects too, are all liable to the opprobrious epithet if they do not take care, and it is to be feared there are more fools than wise in this world—certainly there are enough of them without adding to them from the ranks of this profession.

You have had, as I understand, a good many papers and discussions on practical subjects, and you have all had more or less insight into the practical part of the profession. But the practical is only one side—the scientific part; there is also the other side—the artistic, of no less importance for us as architects, if we would escape classification with the fools. And it is for you students and draughtsmen to look very carefully into this matter. If you ever mean to be anything or do anything in the profession you have chosen to follow for your livelihood, you must study both sides—the art as well as the science of architecture. Architecture is not complete as an art only, neither is a knowledge of the practical part alone sufficient to warrant a man calling himself an architect. How can a man call himself an architect if he is only a builder? or how can he practice in the profession if he is only an artist? But there are many men who try to do so, and these most certainly are the fools of the proverb.

A builder, whose work is entirely practical, has no time to go into the study—his work is to execute in stone, brick or wood, the forms given him by the architect. It is not for him, even if he cared about it, to say this or that form is incorrect, and to request the architect to alter his drawing accordingly; but he is to have the work done in stone, and therefore to memorialize, every one who shall look at the stone for years to come, that this architect who ordered him to do it, either did or did not know what he was about. If he did know then the form is correct, and if he did not, it is incorrect, and he has handed down to posterity a sign and mark of his inability. If it rested with a stone here or a stone there, it would not matter so much, but a whole building often and often exhibits to those who are educated at all, the fact that the man who designed it was not educated, and the public generally are becoming more educated every day.

So with an artist. He may design something to be executed in stone that can not be done in any other material than iron, or he may design brickwork that could not be carried out, and wood must be substituted. The artist, to be an architect, must know the capabilities of the materials he would employ. A striking example is to be seen in the work of stained glass artists all over the world. They are artists, and have studied their art, but they have not studied architecture, and one usually sees saints and angels backed up by impossible buildings, or standing under canopies of most impracticable design.

Besides being an artist and a builder, an architect must be a good business man, of regular and orderly habits. The work of his business is of such a varied character, that if he has any business at all it behooves him to have his wits about him, and have everything in order to his hands. His day's work and appointments must be carefully mapped out, that he does not have to go over the ground twice and thereby waste precious time.

An architect must be a man of probity and honor. Sad to say we have many men in the profession who are not so. How often we have instances of underhand dealing, conniving with one or other party to the disadvantage of the other. An architect fills a position with regard to proprietors and contractors such as is occupied by no other professional man. He is the sole medium between the proprietor and the contractor. He has the interests of both in his keeping, he has to act fairly and squarely on behalf of both. If the architect sides with either the one or the other to the prejudice of the other, he is failing in his duty. Students and draughtsmen have not of course in their positions these responsibilities to the same extent as architects, but in so far as they are assistants to their employers, it is well for them to bear these things in mind, and when dealing with clients or builders to act accordingly. But your responsibilities do not rest here. You have been endowed with a talent by your Maker to be cultivated and improved by you, and you will one day have to answer to Him, not only for the use to which you have put it, but to the extent to which you have improved it. There is nothing in all creation, from the highest to the lowest forms of all three kingdoms, in which there is not some beauty. How is it then that the works of so many men, brought up in a world in which there is so much that is beautiful, harmonize so badly, or rather do not harmonize at all, with the beautiful things of Nature? To confine ourselves to works included in our profession, how is it that there are so few good buildings, beautiful buildings, on our streets? The beauty of a building does not depend entirely on the color of its materials, and certainly it does not depend upon the amount of money expended upon it. Then, when there are buildings of all sorts going up around us, how is it that so few are beautiful? Take a walk here in town along one of our streets devoted to private residences, and you will see on either side of you houses of various types—some that attract attention on account of this or that particular detail strikingly noticeable, and others, that you cannot say at the moment why you do not like them, but you are sure you do not, and begin to ask yourself the reason why. Then you come to a house perhaps not a brick larger than the majority of the houses you have noticed, and perhaps costing less money rather than more, and it strikes you at once as being beautiful. You cannot point to any particular detail and say, it is that that makes it so, and you cannot find a feature that seems out of place that attracts particular attention to itself; it is the general appearance of the whole building that you like; each part is well proportioned; there is a harmony and a sense of repose pervading the whole design which you cannot fail to admire, if you have a spark of the artist about you. There are buildings in England and elsewhere, recently erected, every bit as beautiful in their way, as the cathedrals of centuries ago, in their way—buildings that one can stand and look at as one would at a picture. These are buildings that have been built by architects—properly so-called—artists as well as builders—men who in designing, know what they are about; why they put this detail here and that feature there, who proportion one part to another with a natural talent, trained to perfection, so that to design a thing in beauty is as much a pastime as a labor to them. But this perfection in design has not been attained without great labor and study; there is no royal road to that end. Be the genius of a higher or lower order, the result will in one way be identical. Some may have a greater genius and their works may be wonders of the world, others with less genius may still produce works of equal beauty, though perhaps, of lesser dimensions and for less important purposes. It is to this that all *bona fide* students desire to attain. These exquisite buildings inflame their desire to know how to do likewise. It is only because the cathedral builders of the middle ages were so intimately acquainted with the science of construction that they were able to dispose their materials to produce such glorious effects, and it is only because the architect of the day has mastered both the art and the science, that he is an architect; therefore, if you aspire to be architects you must have architecture at your fingers' ends. We have only to use our eyes to ascertain what architecture is, but it requires a good use of the brain as well to know how it is produced.

On this continent students have the very great misfortune of not having old buildings to examine, and they have to get the greater part of their information second hand, by means of books and drawings. Some few have the advantage of being in the offices of men who have themselves studied the old buildings, and from them and their work they can learn a great deal more. But to keep pace with students in the old world, you must work much harder, and never lose a single opportunity. We are fortunate in having a good public library, and it would be well for you

during the present winter to organize an interchange of the architectural books among yourselves. Get up a scheme of reading, and make copious notes while you read. As an example for reading, take Egypt to begin with. As the mother of all nations and of all the arts and sciences, read all you can get hold of upon the customs and habits of the people ; then go to Assyria, Chaldea, Persia, and so on, and get up all the information you can upon the methods of construction and art used in the different countries. If you set steadily to work you will soon awaken an interest you never felt before. It was not until the more enlightened days of the Christian era that the real genuine science of construction began to be learnt, that is to say, the use of the least material consistent with security, so disposed that every part and fragment was of use and could not be done without. All the earlier work upon which I shall touch to-night was rude, and without any proportion between the actual work required to be done and the material for doing it. The ancient nations had no difficulty in securing labour ; every ruler was an absolute autocrat, and his subjects generally submitted with good grace. Prisoners of war were always plentiful, and were always used as labourers. They had to work hard, take kicks, blows and worse for payment, and live on what they could get. The indomitable persistency of the Egyptian monarchs has left us vast and magnificent monuments of their ruder art. Immense as they are, yet no trouble was spared and time seems not to have been taken into account; the stones fitted with such fine joints that they are hardly visible; huge stones made to slide in grooves, fitting so closely yet moving easily so that a pin can hardly be inserted in the space between. There is no better work on the pyramids than that of Piazzi Smith's, entitled, "Our Inheritance in the Great Pyramid," and which is in the Public Library. He minutely describes the particulars of every part, and the wonderful accuracy with which the work was done, giving all measurements taken by different surveyors and explorers from the earliest time.

There was an example recently in one of the daily papers, of the carelessness with which men will read, and then go and put an entirely different construction on the words than is meant by the author. "A little knowledge is a dangerous thing" is a very true saying, but the only danger to this reader was that he made such a fool of himself, and attempting to teach others, was apt to lead them astray. From his letters it was easy to see what books he had read even without his mentioning them. In some places he would quote but twist the meaning round completely, and he knew nothing further than he read. The subject was, "Assyrian History." He read Mr. Smith's work edited by Prof. Sayce and, without reading any others for corroboration, he constituted himself an authority and wrote to the papers vehemently denouncing any one who differed from him. Then he was silent a while; he was reading Rawlinson's "Five Ancient Monarchies." Presently he burst out again; he had just got to the end of first volume apparently and began to spring upon the public his marvellous knowledge. You must read and study this subject outside office hours, or you will never get on.

I shall not be able to-night to do more than take a very cursory glance at the History. The subject is such a vast one, covers so many thousands of miles and so many thousand years, that in one evening it will be impossible to go into it more in detail; that must be left to a future occasion. I can only give you an insight into the complexity of the subject. I will get on as far as possible and leave time for discussion presently, outlining the course you should pursue.

The wonderful excavations for the tombs of the earlier kings of Egypt give us examples of the earliest mural decorations. In the rock-cut temples with the architectural façades cut in the face of the rock, we have the beginning of architecture proper, and we trace its various progressive steps from tomb to monument and temple. An important matter to observe here is the variety of influences at work on the formation of any style of architecture—not only the materials to be found at hand and unity of purpose on the part of the people, but their manners and customs according to their warlike or peaceful dispositions, the origins of the different nations, the localities and surroundings of the forefathers of the race, the religions, traditions and superstitions of the tribe, and particularly the intluences of climate."

After outlining the beginnings and leading characteristics of architecture in Egypt, Assyria, Chaldea, and Persia—the temples, tombs, palaces, modes of construction and decoration, with the successive steps of development—the lecturer in conclusion, said:

"I have not ventured this evening to touch upon the matter of detail, either artistic, constructional or decorative; it has taken me all our time for this evening to outline roughly the principal features of the architecture of the first 3000 years of its existence, and there is still another matter to look into of no less importance; I allude to chronology. An architect must be sure of his dates; he must clearly understand to what century such and such details belong, and this is a point which very soon distinguishes between the educated architect and the "fraud" practising as an architect. The very form of the mouldings of the more delicate styles of architecture are indicative of their dates, and it is excruciating to see how men will jumble up mouldings and details of different dates, without regard to fitness, in a hodge-podge of unmeaning rubbish, which they fondly believe is a triumph of their art. Let us consider the dates of four or five kingdoms I have taken you through to-night. It is only through recent research, that is to say, during the course of the last fifty or sixty years, that the indefatigable efforts of explorers have enabled us to arrive at anything clear and substantial. The wildest notions have been promulgated, and every year adds to our knowledge, and you are fortunate in living at a time and beginning your studies when the doubts and dissensions are being rapidly cleared away. So in after years you, at any rate, will have no excuse if you muddle your details. A building of different dates mixed up together like currants in a pudding is as incongruous and ridiculous as a person who would appear in the streets with say, a slashed mantel of silk and velvet of the 16th century and a chimney pot hat of the day on his head, a perfect guy of costume! but that is what a good many houses and churches are now-a-days.

It is no longer reasonable to speak of such in definite terms as 6000 and 7000 years B. C. in reference to architecture. We are unable to go back further than B.C. 3500 as the very earliest date. There we begin with the tomb excavations. A little later, 200 years B.C. 3300, we have the Pyramid Builders. Ferguson, according to Manetho, starts with the Pyramid Builders at 3906 B.C., but Manetho is now found to have gone back too far. The Temple Builders we put down as in the 19th century B.C., not earlier than 1819 B.C, and from thence onward. The exodus of the Jews took place about 1312 B.C. Then in point of date come the Chaldeans, but of their very earliest history we have no architectural remains. Chaldean history opens at 2400 or 2500 B.C. in Lower Babylonia. They flourished for 1100 years, till B.C. 1300, when they were subdued by the Assyrians, who for six and a half centuries dominated the land, and lived, flourished and died. Then the Chaldeans that we have to do with come before us. They reasserted themselves as a nation and existed for the short period of little more than 100 years, to B.C. 530. The Kingdom of Persia existed between B.C. 558 and B.C. 336. It was at the height of its greatness during the years between B.C. 506 and B.C. 479, hardly 30 years.

Our sketch has brought us down to within 350 years of the Christian era, and we are confronted by two roads, one going west, the other east. If we follow the easterly course, we must trace the Art in Asia, but the westerly or European route is the one which just now interests us most. Bearing in mind the extent of the Kingdom of Persia, it is easy to see how closely even China is connected by manners and customs, by polity and civilization, with Egypt, and easier still to see how in the progress of the Art westward, the glorious Gothic was developed. But we have come to a good break, and probably you have heard enough for one night, and it would be well to recapitulate by means of discussion. You see how vast a subject it is, but at any rate if I have succeeded in arousing a keener interest in this important branch of your professional knowledge, I shall have attained the object of my visit to you to-night.

WOODSTOCK COMPETITION.

IN our last issue we referred to the proposed competition for a new court-house for the county of Oxford to be erected in the town of Woodstock. We then spoke in strong terms of the conditions of the competition, and although they have been modified to the extent that the successful competitor is promised the carrying out of the work under certain conditions, we must still protest against the unfairness of the competition, and advise all architects who have any respect for their profession to refrain from submitting designs.

There is a large quantity of chance, even in a competition where every care has been taken to ensure that the best design shall win. In a competition where no care has been taken to guard against unfairness, it results in a lottery, with the chances in favor of the least deserving. Architects as a body should do all in their power to reduce the number of unnecessary competitions. There are times when a properly conducted competition results in good to the public and to the profession, but it is only in cases where the work is of a public and very important character. No man worthy of the name of architect should enter a competition where all the conditions are framed to protect but one party, and that party the one who will derive almost all the benefit.

We will state our objections to the conditions in the order in which they are placed in the advertisement of Dec. 26th. We will not refer to the amount of the premiums, for although they are not large, they do not much affect the fairness or unfairness of the competition. But the next clause we would not allow to be placed in any set of conditions. For the paltry sum of $150 or $200, the County Council of Oxford desire to appropriate that which is worth to them very much more, or nothing whatever. The preparatinn of a set of preliminary drawings for a building to cost $68,000, is worth $680, and yet the Council proposes to appropriate two or it may be three sets for a sum very much less. Architects are averse to having their plans appropriated, and this clause will prevent many entering the competition.

The next serious objection is, that there is no mention of any professional adviser. Those designs sent in are apparently to have their merits and demerits weighed by a special committee of the County Council who will decide as to the winner of the competition. What architect of any experience will submit a design to such incompetent judges? One might as well hope that a committee of architects would be able to judge correctly the good and bad points of a horse, or the respective qualities of different grains, as that such a committee will be able to choose the best three designs in their respective order of merit out of a number of others. An expert's decision is not infallible and may err greviously, but the possibilities are that he will give as nearly fair a decision as a fallible man is capable of doing, provided that the expert is both honorable and competent. That a committee entirely ignorant of all the points in the problem can give a just decision, is almost as probable as that the moon is made of green cheese.

All instructions should be printed and forwarded to applicants without any trouble or cost to them. The number and sizes of the rooms should be stated, with all possible information as to the uses to which they will be put.

There is no necessity of carefully worked out plans and specifications, as seems to be required by the advertisement. All that is necessary is that each competitor should show his method of giving the desired accommodation, with such elevations as are sufficient to explain the design, together with explanations of the plan, and a description of the material proposed to be used.

In the last clause we have a most wonderful condition, viz.: that no awards will be paid until the building has been tendered on, and that may not be until the 1st of July, 1890. Just think of it! a man to surrender his plan for a paltry sum, and even then the payment of that small sum to be conditional on whether the accepted design can be built within the appropriated amount. We suppose that in case no awards should be paid the plans would be handed back to their owners. It would, however, be impossible for the Council of the County of Oxford to surrender the information which it acquired through these plans, and then it would be appropriating that for which it never gave value.

In the "Supplemental Circular" it is stated, that "The architect who is the ultimately successful competitor shall * * * be awarded the superintendency of the works at a price * * * not to exceed 4 per cent. of the contract price." Any architect who faithfully fulfils all the work devolving on him in the erection of a building of the above character and costliness, is well worthy of the full commission of 5%. How much more is he entitled to it when he has had to go through all the worry and expense of a competition!

That men can be found who are prepared to enter a competition such as the above, is surprising. That many will enter there is no doubt, nor is there any question that they will not be those who are capable of doing the best of work. When competitions were first introduced, it was with the object of getting the best design obtainable from among those most competent; now it would appear to be with the object of getting a design of some sort or other from among those who are most incompetent.

We strongly advise all architects to refuse to submit designs under the terms of this competition, and would be pleased to receive the names of those whom the conditions would debar from entering the competition.

QUERIES AND ANSWERS.

SIZE OF WOOD BEAMS.

(No. 1).—Will some one state a simple formula for finding the strength of wood beams?—ENQUIRER.

STOPPING CRACKS IN IRON TANKS.

(No. 2).—I have a rivetted iron tank which is either cracked along the rivets or wants packing. Is there any way to stop the leaks otherwise than by getting a new tank?—"LUX."

(No. 3).—How can I take the glass out of old sashes without breaking it or cutting the wood?—"J. F. C."

PROPOSED CANADIAN ARCHITECTURAL ASSOCIATION.

THE committee which was appointed by the Architectural Guild of Toronto to make arrangements for the formation of an Architectural Society for the Province of Ontario, has prepared a draft of a constitution for the proposed Society. It will also report that copies of this constitution be sent to all architects of good standing in this province, that they may be able to make any suggestions towards its improvement. A general meeting of all practising architects in the province will be called at an early date for the formation of a Society, the adoption of a constitution and the election of officers.

It is hoped that an active interest will be taken in this movement by all architects who desire the good of their profession. Local meetings should be called, and every side of the question discussed, that intelligent action may be taken for the advancement of architecture in the country.

United action on the part of architects will not only benefit themselves and do much for architecture in this province, but also cause the work of an architect to be better understood, and consequently better appreciated by the masses.

The Architectural Guild of Toronto has only been in active existence eighteen months, yet it has achieved much. There have been material gains of a positive character, but the greatest benefit has been through bringing the members together in a sociable manner. They have become acquainted one with the other, and are thus better able to make allowances for each other's weaknesses. They are commencing to understand that in pulling others to pieces there is such a thing as assisting in the act of pulling oneself to pieces at the same time. No architect can do work so perfect that it is not open to criticism, though some men can do work so bad that it is not worth criticizing. When one architect examines another man's work with the sole object of discovering what is bad, refusing to see the good, and then proceeds immediately to inform the general public of the discoveries he has made, he does himself as much harm as he

does his opponent. The public seem to be better able to remember the faults in a piece of architecture than the good points, more especially when the faults have been paraded before them by an architect of a jealous disposition. Why should architects draw attention to the faults in work executed by their professional brethren, and neglect to point out the good that is in it? Would it not be much better to go to their professional *confrere* and point out his mistakes, that in his next work he may be able to avoid them?

It is to be hoped that this movement inaugurated by the Architectural Guild of Toronto will meet with the hearty co-operation of the members of the profession throughout the province.

There is every hope for the rapid advancement of architecture in this province. There is talent of the highest grade among our architects, and when the Department of Architecture has been established in connection with the Engineering School much valuable assistance will be rendered the profession in the education of the masses to a proper appreciation of good work. For the past three or four years it has been the impression that any work of prominence must be done by outsiders if it is to be executed in a creditable manner. That such is not the case has been proven more than once, and yet it will have to be proven again. That in the end talent and perseverance will win, there is no doubt, but nevertheless the fight is a hard and most discouraging one.

It is hoped that every architect who is a *man*, will do all in his power to assist in the formation of the proposed Society, and afterwards make it a living, energetic power for good.

There is a certain faction in this city who take special delight in slandering the resident architects. Statements are made and reiterated which are false, contemptible and cowardly. If they were made openly, they could be met, but being made in a confidential underhand manner, there is no way of contradicting such statements. There is one statement made by friends of a non-resident architect, that the Toronto men are unable to have their work pushed through to completion in a thorough and businesslike manner, and that their "ideal architect" always carries out his work with dispatch, and can always be depended upon to fulfill any arrangement he may have made. We should like those parties to explain how it comes that there is a bulletin-board of a Toronto architect on a building on Wellington Street, which is not being erected under the supervision, with the information that "these premises will be occupied early in January by Mr. ——" etc. It is now the middle of February, and the building is not enclosed, and when it will be ready for occupation the future only can determine.

SUGGESTIONS FOR BUILDERS.

BY OWEN E MAGINNIS.

BUILDERS, who are sometimes hurriedly obliged to make their own plans, will work to much greater advantage, by drawing them to a scale of ¾-inch to the foot, which is two-thirds larger, than the usual architectural scale of ½-inch to the foot, provided the building be of ordinary limited dimensions. Should it be large, however, a smaller scale will have to be resorted to, in order to bring the drawing within the area of the paper. Using the increased scale, simplifies measuring from drawings, as a two-foot rule is all that is necessary in taking off; each 1-32 inch representing ½ inches; each 1-16 inch, 1 inch; each ⅛ inch, 4 inches, and ⅜ inch, 6 inches. For the same reason, it is always judicious in making details and working drawings, to lay them down to a scale either of 1½ inches equal to 1 foot or 3 inches equal to 1 foot. These scales are very comprehensive to mechanics, for 1½ inches on the rule is equal to 1 foot, actually constructed, ¾ inch equal to 6 inches, ⅜ inch equal to 3 inches, each ⅛ inch equals 1 inch, and each 1-16 inch equals ½ an inch. Similarly with the 3 inch scale. Details of cornices or other simple parts, can be easily shown half size, full size or in section and elevation, for men, on a wide piece of board, and the scale can be used should the board not be of available width.

Has any Canadian builder ever tried or adopted the roof system for laying out the frame of a house? If not, I would suggest the following, which is one of the best in existence, though not generally known: Supposing the foundation to be laid and ready for the frame, measure the plan, and find the longest measurement, whether it is one of the sills or a corner post, and make a rod about 4 inches wide of ⅜-inch pine stuff, and line it off in pencil, in margins from ½-inch to ¼-inch in width, 6 inches longer than the longest measurement. Now find from the drawing, the exact height of each sill, and lay out one on each margin, marking the halving at the corners and the mortises for posts. Lay out for each sill all the wall studs, window and door openings, writing "window" where a window comes, and "door" for a door. When there are breaks in the plan and small sills, they can be laid out on the reverse side of the rod. This rod can be easily laid out with a ten-foot rod and a rule in the shop beforehand from the plans while the foundation is being put in, so that the timbers can be sorted, marked and cut at once, without any delay. The superiority of this system over the old one of laying out each stick separately, is obvious, for everything is laid down on the rod, and errors are not so likely to occur. Another rod can be laid out for posts, showing the tenons top and bottom, for plate and sill, mortises for girts, etc., and the reverse side laid out for girts and wall plates. Sill dimensions should be carefully figured on the rod, so that each timber or number of timbers could be picked out as called for, and be marked from the rod.

The efficiency of the above will commend itself to builders, who are on the lookout for system, and consequently saving of time.

The Queen Anne roof of tin causes much trouble to those who have not got sufficient details, including a roof-plan from the architect, owing to the owner having bought the plans outright, and when this is the case all he obtains is the cellar and floor plans, one or two elevations and a section of the stories. I have known more than one builder to become hopelessly stuck on a roof of this kind, and only proceeded with the framing when he had attained a roof plan from the architect, which cost the owner $10. The best way to do in a difficulty like the above, is to follow his example, and go to the architect, that is if he is willing to furnish a plan, for some architects are very conservative, and will not supply any details unless they have the superintendence during construction. If he will not furnish it, or the owner is unwilling to pay the extra expense, it would be advisable to lay down a plan of the wall-plates to a large scale on a drawing board, and raising up each pitch to frame the roof in sections, proceeding carefully, so as not to spoil any of the timbers. A sectional drawing showing the pitches, headers for dormers and chimneys, and different levels of wall plates, will be of material assistance in framing and raising.

MONTREAL.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

THE number of new buildings erected in Montreal last year was 933, including 533 tenements, 68 stores, 1 warehouse, 18 manufactories, 110 shops, and 2 churches, at an estimate cost of $3,477,805. Ten years ago the number of new buildings erected was only 241.

WINNIPEG.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

WE are rapidly approaching the building season of 1889, and although a great many people are talking of building, as yet there is not a single job actually decided upon. This is not as it should be. If plans were prepared and contracts let now, the contractors would get material hauled and joiners' work ready much cheaper, so many men being out of work. In the spring, if there are not any contracts let, men go elsewhere to get work, and up go wages, besides rushing the architects.

Improvements are being made to Grace Church, to cost about $3,000.

Mr. C. O. Wickenden, architect, has removed to Victoria, B. C.

QUEBEC.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

A NEW retail store is now under construction on the corner of Crown and St. Joseph streets, which has been leased to Messrs. Robitaille and Bernieo, dry-goods merchants. The site was formerly occupied by the late Theo. Hudon, the foundation of whose store will be used for the new building. The latter will cover the whole lot, being lit from the two streets above named, having a frontage on St. Joseph St. of 52 feet, and a depth of 80 feet. The estimated cost is in the neighborhood of $30,000. All the work is being done by the day under the superintendence of Mr. Raymond, who also prepared the plans.

All the details respecting the widening of St. John St, (alluded to in November number) have been completed, and the long-talked-of improvement has been brought within appreciable distance. Out of about thirty proprietors, twenty-six have been settled with, and of this number several have taken the preliminary steps towards rebuilding. Nothing will however be done until May, as leases have to run out, and in some cases new lines have to be run between neighbors to square lots, etc. A disposition prevails to build with some regard to uniformity in height and material. If this prevails, the result will be more pleasing than is generally the case where every proprietor follows his own sweet will in the choice of material, and one builds high and another low, and so on. Harmonious action between our architects may work a change for the better in this special case.

Another long-talked-of project—the new hotel—is again on the *tapis*. A magnificent site has been secured from the Federal Government on very reasonable terms, viz., $1500 per annum. A meeting has been held, stock lists opened and canvassers set to work. Your correspondent has not heard the exact amount subscribed, but prospects are considered good. Hopes are expressed that an early commencement will be made. The site above alluded to is that formerly occupied by the old Parliament Buildings at the

head of Mountain Hill. It commands a splendid view of the Harbor, and Lewis Heights, with the Island of Orleans and Cote Beaupre in the distance, with a glimpse of the famous Montmorenci Falls; and is in close proximity to the Post Office, Cardinal's Palace, &c.

CANADIAN SOCIETY OF CIVIL ENGINEERS.

THE second annual meeting held in Montreal on the 17th ult., was well attended. The proceedings were enlivened by the presence of the Governor General, who, with Sir W. Dawson, are the first hon. members of the Society. The increase in membership, deducting resignations, is 84, and the list now stands at

Hon. Members	2
Members	258
Associate Members	87
Associates	47
Students	145
	540

The report says, "It is encouraging to find that eminent engineers both in England and the United States are enrolling themselves as members of our Society. It is a mark of its growing importance and surely a presage of its future success."

There were six ordinary meetings for the reading of papers, three special ones for students. One paper by a student has been deemed of sufficient merit to be printed in the transactions.

The library makes satisfactory progress. A number of valuable contributions in books and photographs have been made by members of the Society. Arrangements will shortly be completed whereby members will be able to borrow books from the library.

The sum of $3,281 has been promised for the building fund. Of this $1,809 have been paid in. The students have responded liberally to the fund.

The income for the year ending 31st December, 1888, amounted to $2,777.64, the general expenditure $1,789.64, leaving a balance of $988, which, together with the balance of $960.92 brought forward from 1887, gives a total balance to the credit of the Society of $1,948.92.

CANADIAN BUILDERS' AND CONTRACTORS' ASSOCIATION.

HAMILTON, ONT., Feb. 19, 1889.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—I noticed in the January number of the CANADIAN ARCHITECT AND BUILDER a reference made to the formation of a Central or Provincial Association of Builders. The idea is I think a good one, and I wonder that such an Association has not been established long since.

Judging from the number of local Builders' Associations that have been formed in this Province, it would seem to be a recognized fact amongst the contractors that organization has to them become an essential to success. If this be so, it would be well that such Associations should be regulated and governed by certain general laws and principles which should be well considered and adopted by representative building contractors convened from all parts of the Province. I think this is necessary to insure uniformity of action in case of any threatened trouble among operatives.

With a Central Association formed, and a working Executive appointed to receive and transmit reports from and to local Associations, the contractors generally would be placed in a better position in estimating for work. I believe further, that the knowledge that the building contractors were united throughout the Province, would have a deterring effect upon the advancement of so many unjust demands by the various labor organizations.

Again, there are a number of questions of great importance to the building trade which ought to be considered very carefully by a Provincial Association, such as the Lien Law, the Employer's Liability Compensation Act, and the establishing of Trade Schools in different parts of the Province. These are matters which affect the building trade more than any other, and which should be discussed, and the consensus of opinion thereon submitted to our legislators for their guidance in the framing of laws bearing upon these matters.

Other reasons could be urged for the formation of a Provincial or Central Association of Building Contractors, but as I have already trespassed too much on your valuable space; I must leave them to abler pens than mine to set forth. Hoping that this subject will receive the attention from your contributors, which its importance demands,

I remain,

AN INTERESTED OBSERVER.

A bill has been introduced in the Dominion Parliament, which provides that any company or individual owning a building in which there is a hoist or elevator, must provide on each floor an automatic guard or gate to the hoist. Penalties are to be imposed in the event of the law not being carried out.

The Nova Scotia Glass Works, New Glasgow, N. S., have sold in the seven years over $600,000 worth of goods and paid in wages, $260,000, about four-fifths of the goods have been sold in the Dominion. The company contemplate enlarging their business and expect within the next year to double their output.

MANUFACTURES AND MATERIALS

MISTAKES IN BRICKMAKING.

H. H. MCLURE, before the National Association of Brickmakers, at the meeting held at Memphis, Tenn., Nov. 16, 1888, said: "I shall take this opportunity of stating that I am not a practical brickmaker, but having been for the past two years serving the Rome Brick Company in the capacity of secretary and treasurer, I base my remarks on observation rather than practical experience.

During this time I have noted some of the mistakes we have made, and it is a reasonable hypothesis to presume that our mistakes would be yours were the positions reversed.

In a shorter space than one year after we began operations, our 40-horse power engine was replaced by a Harris-Corliss of 125-horse power; our 12 power hoist was set aside, and one of twenty-five put in its stead; our two-inch water main, 500 yards in length, has been taken up, and one four inches in diameter, or four times the capacity of the old, now gives us ample supply of water. This called for additional pumps much larger than at first used, and, had we known at the beginning what we learned later, this additional expense could have easily been avoided.

The first few months of our brickmaking we kept our team constantly on the road to and from the machine shops and foundries, hauling new and repaired machinery to us, and old iron to the more fortunate foundry-man.

Experience is the best testcher, and it applies with more potency to the manufacture of brick than any other business enterprise. After our first reverses we learned to prepare our clay properly, and more, that we could not profitably make dry clay brick in a semi-dry clay machine.

The mistake of putting clay into a machine without proper moistening and thorough preparation is a blunder.

Let me suggest just here to prepare your clay in a common sense way before it goes into the machine, and I will (by way of parenthesis) also suggest the less you "throw in for good measure," in the shape of rocks, iron scraps, bolts, spikes, and hammers, the shorter will be that awful "bill of particulars" from the machine shop and foundry.

Another mistake I might mention in this connection is negligence or carelessness in looking after the machinery.

Don't allow the machine to run with bolts loose, shafting out of line and boxes worn to the quick. In an incredibly short time you will have the leaning Tower of Pisa in miniature, and your machine will afford the material for the simile.

When any part of your machinery breaks frequently, have the weak places made stronger. By a close observance of this rule we may overcome one source of annoyance and expense.

The old maxim, "what is worth doing at all is worth doing well," holds perhaps with stronger emphasis in brickmaking than anything else.

When a brick manufacturer purchases an engine or machine he would do well to select a competent machinist to put them in position. Incompetency in this all-important and essential feature too frequently proves the "Head of our woes."

The same rule applies to a dryer or kiln. If you build a dryer, of whatever kind, know that it is constructed on the most approved plan and properly managed after it is put in operation. The same is true of kilns. Determine which is the best for your purpose, then have it constructed by men familiar with every detail and point of the work, and when they are built have them operated by men whom you know are competent and trustworthy, so you can derive all the benefits from their use.

With the very best machines, dryers and kilns, success is impossible without intelligent management.

It is not enough that everything is put up properly at the start; they must be kept by constant care and attention in good order, for no engine, machine, dryer or kiln, however perfect and effective it may be in its construction and working, will continue to perform its functions unless properly cared for.

This means not only repairing breaks, but using every precaution to protect them from injury. Do not make the mistake of leaving your engine exposed to rain or dust. Don't use cheap oil on the bearings; don't have a careless man in charge of the machines.

We sometimes make mistakes in counting brick. Our patrons insist that it takes 1,000 brick to make 1,000, and that Salmon brick are not hard. It is best to humor their whims, however unreasonable they may appear to us. For, perhaps, the most of us depend upon our patrons for the "sinews of war" in the ever-increasing pay-rolls and fuel bills. I have mentioned only a few of the mistakes in brickmaking, but I trust these random remarks may answer as a text from which some of our practical friends may proceed to enlighten us on their personal mistakes in this line. Perhaps we learn more from others' mistakes than from their successes in this life.

We are pleased to notice that Messrs J. H. Farr & Co., of this city, who commenced about a year ago the manufacture of roofing pitch and asphalt-paving pitch, have succeeded in producing a native article which has shown itself to be superior to that hitherto imported from other countries.

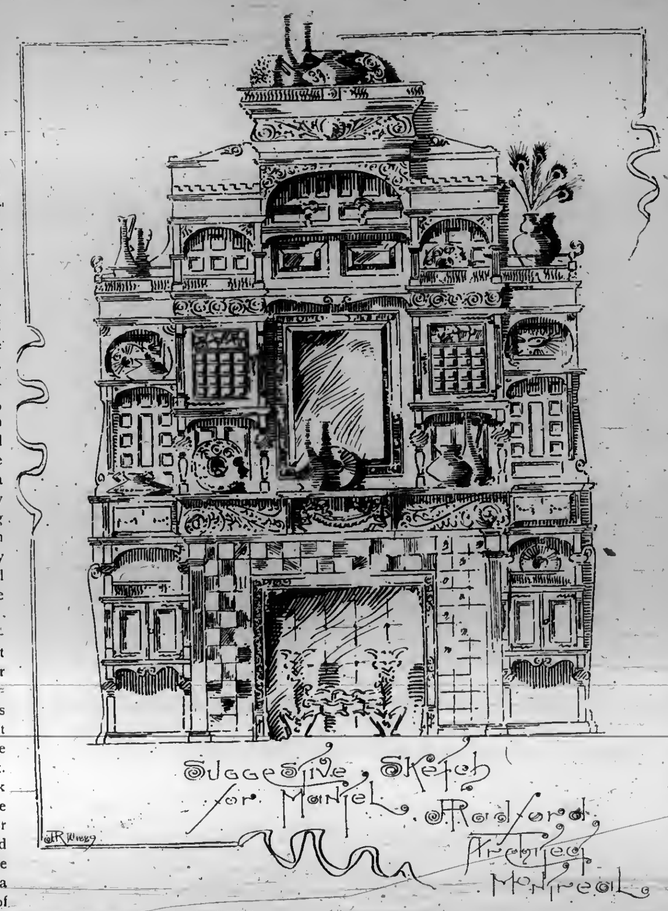
DECORATION AND FURNITURE

HOW TO DECORATE AND FURNISH A HOME.

A THOUSAND dollars seems a great deal of money to many people, says a writer in the *Builder and Decorator*, yet it is a very moderate amount for the furnishing of a city house, and much good management is required to make it cover all that is needed "up-stairs and down-stairs and in my lady's chamber." The money vanishes most unaccountably, and strict adherence to a carefully arranged list of must-haves and may-haves is the only way to avoid coming to grief.

Others again go to the opposite extreme, and appear to be hopeless of achieving anything pretty or tasteful on a limited sum — declaring that they cannot afford anything but the strictly practical. Pretty belongings, however, may be had even when a thousand dollars is to be stretched over a three-storey house, and taking our nine or ten rooms as they come, we shall see how it can be done.

The hall, unfortunately, is not square—it never is in these moderate city houses—but such as it is, we may make the best of it. The wood-work and a foot of the floor on either side are stained in cherry, the wall-paper is a peculiar shade of dull-blue with a glint of silver, and has a rich and expensive look, but it did not cost over sixty cents a roll. The stair-carpet, which is continued through the hall, is a Moquette of dull, soft blues darker than the paper, and at the foot of the stairs, there is a white goatskin rug.



The hat-stand takes up as little room as possible—not more in fact than a picture, save for the projecting pins or hooks. These are of brass, and the square mirror, which is a particularly good one, is framed in cherry. An umbrella-stand of hammered brass, stands behind the door, and on either side of the parlor portiere, there is a plain cherry bracket of graceful shape that holds a pot of trailing vines. A small open cabinet, also of cherry, faces the mirror and holds a few pieces of richly tinted, but inexpensive pottery.

The old-red of the parlor portiere adds a fresh element of beauty to the coloring, and the hall as a whole is a great improvement upon that usually found in houses of this character.

A very pretty brass lantern with panels of tinted glass lends its full share of decoration, and diffuses a soft and charming light at night, and, lantern included, with the stair-carpet as far as the second story, seventy dollars pays for this really handsome hall.

The parlor is very attractive in soft grey and old-red, carpet and wall-paper of the former hue with a pink tinge in it. Here again, floors and wood-work are of cherry, and the carpet, another soft Moquette of an exquisite shade, has daisy-shaped flowers in old-reds and pinks. The curtains, of a thick handsome quality of Madras, show the same colors almost concealing the grey ground, and they are suspended from fluted brass poles.

The furniture is unique in style, and has proved a triumph of ingenuity over moderate resources. A carpenter made a straight open frame in slender cross-pieces of pine nicely smoothed, for a sofa, and the clever mistress of the house covered each piece first with canton-flannel and then with old-red velours.

This sofa was just the shape of a cane settee, and when finished, the little open effect was very pretty.

A small mattress, on which the support across the top of the back and arms was edged with velours was neatly tufted, formed the seat, and the handsome fringe. It was so successful that an arm chair to match was speedily manufactured with equal satisfaction.

A smaller sofa is made of a packing-box, with the lid set up against the wall. This is divan shape, and it is covered with the same red velours and finished around the seat with fringe. It looks well and is decidedly comfortable.

The remainder of the furniture is varied in style and coloring. A very pretty reception chair of rattan has been silvered and furnished with cushions of old-pink plush tied with pink and grey ribbons, while two silvered *tete-a-tete* chairs have cushions

of grey satin on which wild roses are painted. The mantel is built up quite high with plain cherry shelves, which hold some pretty bits of china, etc., that did not have to be bought. There are a few good pictures—not included in the $1,000—two or three pretty little tables, a low book-case of very humble foundation entirely covered with the red velours, each shelf being edged with fringe put on with brass-headed nails, an artistic-looking lamp, etc.

The handsome portiere at the double doors leading into the hall is of double-faced red velours plainly made, and between the parlor and library there is only a wide screen reaching about half-way up, but some pretty Japanese lattice-work in cherry crosses the top of the opening and comes down at the sides. The actual *money* cost of this room was about $240, but much of the work was done by the lady of the house.

A library sounds rather formidable with limited means, but in this case, it is one of the cosiest gathering places in the house. There is certainly nothing stiff about it, and the dull red of the parlor is even more lavishly used here than there. The walls, carpet and wood-work are the same, as this gives a look of greater space, and looks better when both rooms are thrown open, but the chair and lounge coverings are of dull-red leather, and the oblong writing-table has a top of the same material. Brass nails are liberally used, as the room is a middle one and dark, and the one shelf that runs around the chimney has brass vases and candlesticks holding red candles.

The fire-place has brass andirons and fender, and just opposite, there is a long low book-case of six cherry shelves, with a scarf-cover for the top of olive-green felt trimmed with bands of the red velours and a little embroidery in dull pinks and reds. The doorway into the dining-room has a portiere of the same olive felt, with a deep frieze, a quarter of a yard below the top, of bands laid exactly on the basis in dull-red, pink and blue. The cost of this room is about $150.

Beyond is a rather small dining-room, which is still less costly, as there is not much space to cover. The walls are of a dull-red, and the floor covering is a large oblong—the shape of the room—of felt, in the same color but a deeper tint. The six chairs in cherry, with seats of olive leather, were bought at auction for $2 each, and the two arm chairs for $5, making a total of $22. The buffet was another bargain at $15; the carpet did not cost over $10; the curtains, in soft, olive-green serge did not cost over $4 a window, poles and all. The dining-table was bought with the chairs for $8, and it has a very pretty cover matching the frieze of the portiere.

Besides these necessary articles, there are some few odds and ends, making the expense in all about $65.

The pretty stair-carpet is continued all the way up the third-story stairs, and the second floor has the usual arrangement of two large rooms, one small one and a bath-room. The front rooms allow a small dressing-room and a good-sized bedroom opening into each other, and here the wood-work is in natural cherry—light brown with a suggestion of pink in it—and the walls have a pale-pink paper. The bedstead is made of pine entirely covered with a beautiful cretonne having pink roses on a grey ground, and this cretonne is used for the other furniture covering also, the only article on which it does not appear being the low wide bureau that matches the wood-work. A square of very pretty Brussels carpeting, which also shows roses on a grey ground, was picked up as a remnant at the low price of $15, and the curtains are of cheese-cloth, very full and soft, with some of the roses and leaves from the cretonne straying over them at irregular intervals. These sprays were applied with flour-paste and ironed while damp, looking as though they were painted on this cheese-cloth.

It is a lovely room, and its entire cost, with all necessary appurtenances, was in the neighborhood of $75.

The back room is full of sunshine, and has the same undressed cherry wood-work. Blue seems the natural coloring, and blue it is, so far as wall-paper, carpet, and various trimmings are concerned. The furniture consists of an iron bed-stead painted white, and having a coverlet and bolster of blue sateen, a dressing-table covered with cheap white lace over blue, a chest of drawers painted white to match the bedstead, and decorated with brass handles, a two-shelved table covered with blue sateen and edged with lace, like the coverlet, a box-lounge, with pillow, covered with blue and a lace overdress like that on the dressing table, a low arm-chair attired in the same way, a rocker in white-painted willow with blue cushions, a foot-rest to match, and window curtains of some thin white woolen stuff with blue cross stripes. A few old wood cuts, in plain frames of natural cherry, decorate the walls, and the carpet is an ingrain in small white daisies on a blue ground.

This pretty room cost about $90.

The little dressing-room, with a plain, but convenient dressing-table, floor-covering and other necessaries, added about $36 more to the bill of expenses.

On the third-floor, the front rooms were in Turkey-red with ash wood-work, and the back one, in similar wood-work, had furniture covering of blue and white cretonne. On the matted floor of the front room, which had a glow of red in it, there was a large centre rug of silk and woollen strips woven like a rug carpet. The effect was particularly good with the Turkey-red, and the cheese-cloth curtains were lined with this bright-hued material. The wall-paper in both rooms was a pale olive, but in the back room, it was a yellow-cream with dashes of gold in it.

The entire cost of this floor was $150—leaving $150 for up-stairs hall and stair-carpet, the bath-room, kitchen, and various odds and ends. Good management and ingenious handiwork were brought into play to furnish a fair-sized city house on so small a sum with some degree of taste, and small articles were "picked up" here and there at very low prices. The result was a very pleasing one, and may be repeated with variations.

A SPECIMEN OF SANITARY PLUMBING.

A CASE came up for decision in one of the Toronto Courts the other day, which served to show the unscrupulous character of some individuals doing business in this city as plumbers, and the necessity for strict regulation of plumbers and careful official inspection of their work. A engaged B to do a job of plumbing in his house. One of the things B agreed to do was to put in a 4 inch iron soil pipe, extending up through the roof. Instead of this, however, he put in a 4 inch lead pipe to connect with the closet, and on top of this placed a three inch lead vent pipe extending through the roof. The "joint" at the meeting of the 4 inch pipe with the three inch pipe, was described by a witness as something wonderful to behold. So "tight" was it, that a person's finger might easily have been inserted between the pipes. The pipes had been crimped in the way a tin-smith treats stove pipes that will not join, but nothing in the shape of a wiped joint had been attempted. A, upon discovering the condition of affairs, called upon B to properly fulfil his contract. This B refused to do, whereupon A hired another plumber to do the work, and sued B for the cost of the same. In court, B stated under oath that his work had been done in accordance with the usual practice of the best plumbers. The judge appears to have taken this statement *cum grano salis*, and decided in favor of the plaintiff.

Experiments are being conducted by Mr. F. Stuart Miller, C. E., with a view to the purification and utilization of the sewage of the City of Toronto. It will be the wish of every citizen who understands the condition of affairs, that Mr. Miller may succeed in his object.

The Grand Trunk railway is said to be preparing to make a practical experiment with an electric car-heating apparatus invented by Mr. Roe Fuller, an employee in the Grand Trunk shops at Portland, Me. It consists of a dynamo placed in the baggage-car, power being taken from the moving axles. A metal bar is placed in a tank of water in each car. Pipes from the tank extend all around the car. The metal bar is to be heated by an electric current, thus heating the water in the tank.

SANITATION AND HEATING

THE TORONTO PLUMBING BY-LAW.

THE Plumbing By-law has been a source of much unnecessary effort on the part of the committee having it in charge. It has been altered several times since it was first passed, and from all appearances it will be altered many more times before it will meet with the approval of all the parties interested. One would think that two or three competent persons having a knowledge of what is required would be able to put this by-law into a workable form in a few days. The committee has had it under a process of improvement several months. It will be improved in some points, but injured in others. Whether the good will balance the bad, it is hard to say at the present time. A by-law of this description should be framed by those who understand the technical questions involved, under instruction of the committee having the matter in charge. What can be expected when one half the men on the committee know absolutely nothing about sanitary matters? There is also too much consideration shown for interests which are not directly interested no matter what form the by-law may take. The by-law should be framed for the protection of the citizens, and for no other purpose, and other interests must suffer if they stand in the way of the citizens' good.

We have heard complaints that the revised by-law has done away with the examination and licensing of journeymen plumbers. Well, if such is the case, it is a step in the right direction. The master plumbers should be held responsible for all work done under them, and they should not be afforded the loop-hole of stating that the work complained of was done by a licensed journeyman plumber. To our mind it is impossible to examine a journeyman plumber to discover the value of the man, except at very great trouble and expense. A man may pass a theoretical examination and not be able to do a decent job of work, or he may fail on an examination as to the theory and yet be a first-class workman, capable of doing the best of work under competent direction. We would like to see the men registered, so that it would be possible to trace any scamped work home to the man who did it, and then be able to punish him for his criminal carelessness or indifference. The Examining Board should be reduced in number. Three capable men are sufficient to examine all who may come before the Board. There is no reason why so many interests should be represented, and these representatives paid at the rate of $5 per meeting out of the funds of the city. If these organizations wish to have representatives on the Board, let them pay their expenses. One good man could do the work as well as a dozen, and three should be more than ample.

We wish to draw attention to some points in the proposed revised by-law which we consider objectionable. The clause which allows of the trap being done away with on the house drain is a little premature in this city. Our sewers are not perfect enough for such a scheme; and when adopted, provision should be made in some way or other to prevent a few soil pipes doing all the work, to the possible injury of those living in the houses having these too-efficient ventilating soil pipes, or in those houses near them. The scheme is a good one under certain conditions, but they do not exist in this city at the present time, nor will they for some few years to come.

The clause about weeping drains we do not understand. It can be made to mean that no weeping drains are to be laid inside a house, which we do not suppose is the intention. That a weeping drain should not connect directly with the house drains, is a good provision; but that the trap should be placed so that it is accessible for flushing, is unnecessary. If the weeping drains are properly put in there is no necessity for flushing the trap, and any arrangement which depends upon such attention is defective and should not be allowed.

"Air pipes may be of standard wrought iron with steam fittings. Sheet metal will not be allowed." Will some one explain what the above means? We confess we do not know. Does "air pipes" mean the pipes ventilating the traps, or does it mean some other set of pipes? If it was not for the statement that "sheet metal will not be allowed," we would suppose that ventilating traps were referred to; but as we have never heard of sheet metal being used except in scamped work, we cannot see the necessity of a clause to that effect. We would not allow of wrought iron pipes being used, as we believe it to be much inferior to cast iron and lead for the ventilation pipes off traps.

The provision that all cocks, etc., should have the maker's name stamped on them, is a good one. The one to the effect that they should be tested is of no value, as it does not say who is to test them, and if tested, what benefit will accrue without the man making the test is an official of the city, and has authority to reject those fittings not up to the standard, and stamp those which stand the test. In Manchester all fittings are tested by a city official, a small fee being charged to cover the expenses of the department.

The paragraph which calls upon the master plumbers to give certain information to the Water Works Department, is uncalled for. The Water Works Inspectors should be able to attend to such matters, and if not, they should be compelled to.

Paragraph XIX is so worded that no one can understand what it means. It will certainly allow of a great many different interpretations. We are not in favor of relieving a master plumber from making good any defective work which he may have done. The object of appointing an inspector is to prevent bad work being done, and not to relieve plumbers of responsibility for any inferior work which they may have done and which may escape the notice of the inspector. We should judge that the city could be held responsible for any defective work which might show itself after the expiration of the thirty days if the City Engineer gives a certificate of acceptance relieving the plumber of further responsibility.

The last clause in the by-law, "To provide for the appointment of Plumbing Inspectors, Plumbing Examiners and their duties," is incomprehensible to us. There is nothing in the by-law providing for the examination and licensing of journeymen plumbers, and yet this clause provides for an examination before the Board of Examiners under certain conditions.

We hope that the committee, after so much hard work and delay, will bring forth a by-law which will not require changing for two or three years. We have had so many by-laws, that one is puzzled to know which one is in force, without taking the trouble to make special inquiries.

CONTRACTS

CONTRACTS OPEN.

SANDWICH, ONT.—The building of a dry dock here is spoken of.

DUART, ONT.—Plans are being prepared for a brick school house.

MONTREAL.—A factory is to be built here by the Howard Pulp Ware Co

KEEWATIN, ONT.—Another new church is to be erected here next spring.

PICTON, N. S.—The establishment of a system of waterworks is being agitated.

HAMILTON, ONT.—The Orange Association of the Hamilton district will build a hall.

DELORAINE, MAN.—A new English church will be built as soon as spring opens.

ST. CATHARINES, ONT.—The Lincoln Pulp Mill Co. will erect a mill to cost $10,000.

ARDTREA, ONT.—The Presbyterians will probably build a new church next summer.

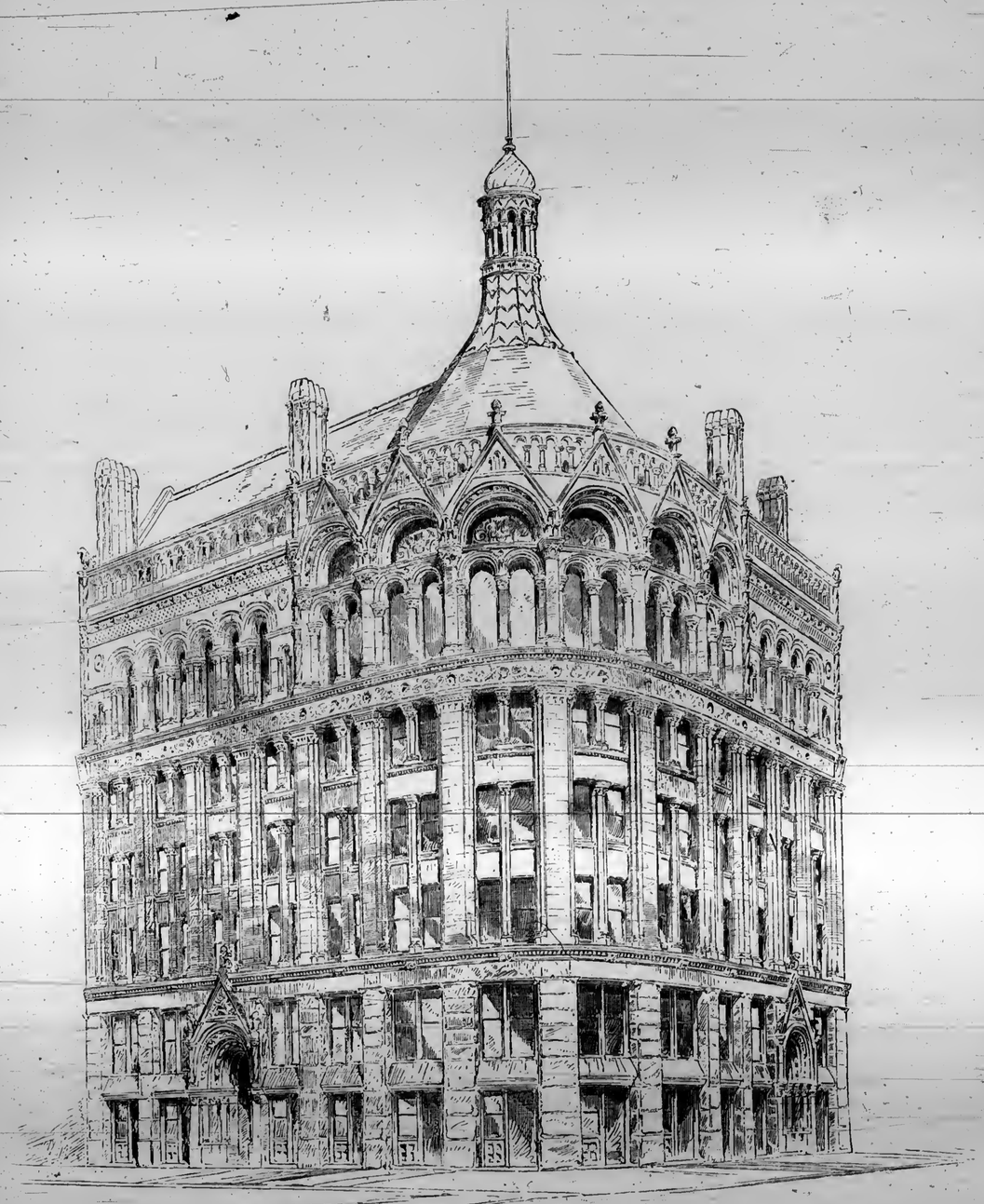
BELMONT, ONT.—The Presbyterians are talking of building a new church here next summer.

VICTORIA, B. C.—A large number of substantial buildings are to be erected this season.

BOBCAYGEON, ONT.—$3,000 will be raised to build an additional wing to the South school here.

ST. LAMBERT, QUE.—The question of water supply is being discussed by the citizens of this place.

MOOSOMIN, N. W. T.—The Watson Manufacturing Company are considering the building of a large warehouse. A court-house, jail, police barracks, and other public buildings will be erected by the government. A new $10,000 hotel is talked of.



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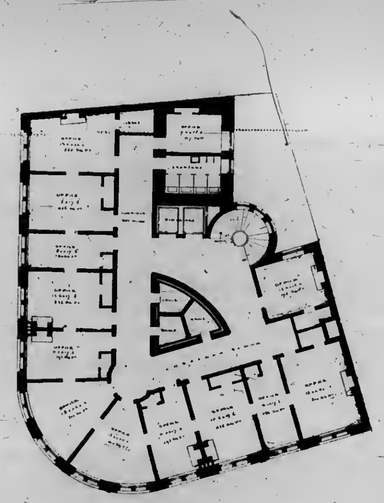
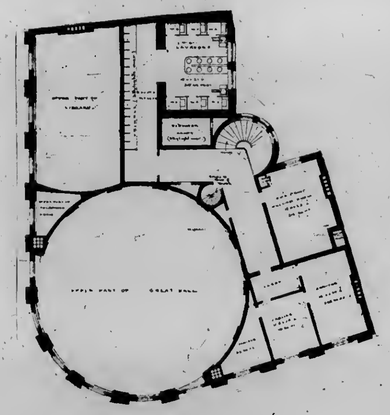


Second Floor.



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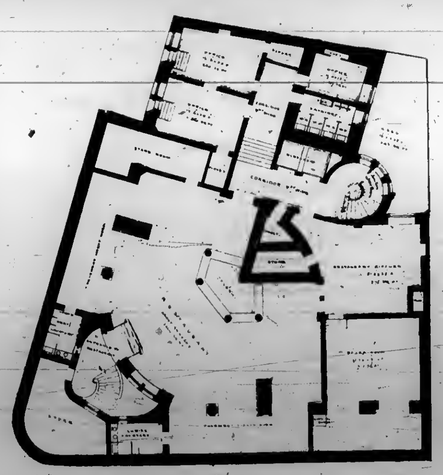
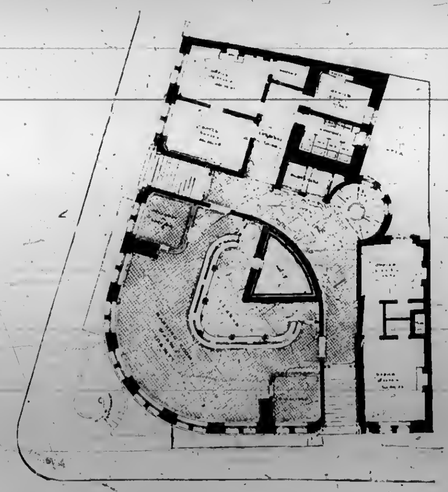


Ground Floor.



First Floor.

CANADIAN ARCHITECT AND BUILDER

FINE AND INDUSTRIAL ARTS · DECORATION · FURNISHING
CONSTRUCTION · SANITATION · ENGINEERING

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—THE—

Canadian Architect and Builder,

A JOURNAL OF MODERN CONSTRUCTIVE METHODS,

PUBLISHED MONTHLY IN THE INTEREST OF

ARCHITECTS, CIVIL AND SANITARY ENGINEERS, PLUMBERS, DECORATORS, BUILDERS, CONTRACTORS, AND MANUFACTURERS OF AND DEALERS IN BUILDING MATERIALS AND APPLIANCES.

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In ordering change of address give the old as well as the new address. Failure to receive the paper promptly should be reported to this office.

ADVERTISEMENTS.

Prices for advertising sent promptly on application. Orders for advertising should reach the office of publication not later than the 12th day of the month, and changes of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

REPORTS received by the CANADIAN ARCHITECT AND BUILDER from various cities and towns throughout the Dominion, and published elsewhere under the heading, "The Building Outlook for 1889," tend to show that a fair amount of building will probably be done during the coming season. There is nothing in the reports to indicate that building operations will be more extensive than last year.

THE "Canadian Contractor's Hand-Book," published as a premium to new subscribers to the CANADIAN ARCHITECT AND BUILDER, is meeting with general appreciation. We have received a number of congratulatory letters upon the results of our efforts in the compilation of this Hand-Book, one or two of which will suffice to show the favorable reception the book has met with: Messrs. S. Bowen's Sons, Philadelphia, Pa., write: "Through the courtesy of Messrs. M. & J. L. Vokes, our Toronto agents, we have received a copy of the "Canadian Contractor's Hand-Book." We must express our pleasure and thanks for this valued little volume, which is full of practical hints and information. If we have not already subscribed to your paper, please put us on your list and oblige." Robert Falbord, Montreal, writes: "I thank you very much. It is a very useful book." We may add that upwards of 150 new subscribers have been added to our list since the publication of our last number. This journal will be made as valuable as possible to the master builder as well as to the architect, and the price at which it is published, not to speak of the handsome inducement which we are at present offering in the Canadian Contractor's Hand-Book, should secure for us as subscribers every master builder who has at heart the promotion of the interests of his business, and desires to be thoroughly equipped to help in its advancement.

THERE are in almost every city ricketty old buildings left standing, which are a menace to human life, and should be pulled down. In Montreal the other day a building of this character which, singularly enough, was expected to stand the jarring motion of saw and planing mill machinery, suddenly collapsed. The walls refused any longer to support the roof, which came crashing down upon the workmen, twenty-five in number, employed in the mill. In some miraculous way, all but two escaped uninjured. The less fortunate ones were almost buried under a pile of bricks and timbers, and both were seriously injured. It is the policy of some owners of old buildings to keep them standing as long as they will hold together, and persons can be found willing to risk their lives by living in them. The taxes on such buildings are a mere trifle, while the land on which they stand is in course of time rendered valuable by the improvements of more enterprising owners in the neighborhood We presume the duties of Building Inspectors are intended to include the oversight of such old structures, as well as of new ones in process of erection. If so, regard for human safety, as well as the appearance and progress of our cities, demands that these duties should be more thoroughly performed.

HERE is a sample of the sage advice which a Toronto daily paper offers to the public on the subject of the proposed new Court House and City Hall for the city of Toronto: "What the citizens should do is to defeat the by-law which will shortly be submitted, and put the work of construction in the hands of a competent commission. Then the commission should set aside a sum of money, say $500,000, and call upon builders to say what kind of a building they could put up for the money, awarding the contract to the one who will furnish the best design. The city has already spent a great deal in architects' fees, which would be lost if a new arrangement were entered into, but it would be better to let them go than to have the citizens committed to the building of a structure the cost of which might mount up into millions before it could be completed." In spite of the self-assurance of the writer who would thus settle off-hand a matter which has engaged the serious thought of the Mayor and a committee of the Council of this city for many months, we must express our lack of confidence in the wisdom of his proposal. The absurdity of asking builders to furnish competitive designs for a building of such cost and importance needs not to be pointed out. The conceit of the most conceited builder would scarcely prompt him to such an undertaking. But even supposing that it should, how unenviable would be the lot of the judges who should be appointed to select from the designs submitted, one suited to the requirements of such a building. The worst punishment that could befall the writer of the article in question, would be to be appointed an arbitrator in the case. It is the business of a builder to build, not to design, and in an undertaking of so much importance any attempt to economize in the direction of dispensing with the services and advice of a competent architect, would result in a series of blunders which would eventually cost the citizens many times the amount of the architects' fees, not to speak of the lasting disappointment, consequent upon the erection of an inartistic, and badly-planned structure.

THERE appears to be little or no supervision of plumbing in the city of London, Ont., notwithstanding the fact that the *Free Press* of that city is one of the few daily journals in the Dominion which devotes considerable attention to subjects affecting the preservation of the public health. The sanitary condition of some of the houses, is thus depicted by a gentleman who, after losing one of his children by a severe attack of diphtheria, set to work to investigate for himself the causes which had induced the disease: "I had the floor of my cellar up, and I found the box drain, immediately under the floor of the cellar, with no trap, nor yet covered with earth, and there was a half-inch space around the waste pipe from the sink. On holding my hand over it I could feel a draft like in a chimney coming up from the sewer into my house; so the cause of sickness is easily explained, although hid by a cellar floor. On closer inspection of the lead trap under the sink, I find it is only about the thickness of writing paper—so that it soon wears or is rotted out. When the houses were being built, the builder was spoken to about the drain not being put lower, but he (the builder) said he did not care, he was going to sell. Although there never has been any sickness in the house before since it was built (about nine years), still the germs of disease were growing. I think there should be a law passed, that no box drains should be carried into a house, for tiles are cheap enough now, and, above all, it should be compulsory for one, if not two, traps to be put in, in its construction. There are four more houses on the same street, the drains built the same as mine." Such a revelation should suffice to bring about the passing of an ordinance stipulating the manner in which plumbing work shall be done, and the character of the material to be used, as well as the appointment of one or more inspectors, to see that the regulations are complied with. The law should provide no only that "no box drains should be carried into a house," but that tile even shall not be used inside a house. Tile is suitable enough for private drains extending from the outer walls to the street sewer. Inside the walls, nothing but iron pipe should be allowed to be used.

WE print elsewhere, draft constitution of the proposed Architectural Association for the Province of Ontario. During the last month, delegates from the Toronto Architectural Guild have interviewed architects of cities and towns east and west of Toronto, on the subject of the formation of a Provincial Association. The result is most satisfactory. The need of such an organization appears to be universally recognized, and the delegates have received assurances on every hand of the willingness of architects to assist in carrying out the object. In view of the encouragement received, a meeting of architects has been called for Thursday, the 21st inst., in the Rossin House, Toronto, for the purpose of organizing under the name of "The Ontario Association of Architects." Every *bona fide* architect in Ontario is given a cordial invitation to be present at this meeting, and assist as far as possible in establishing on a broad, firm and satisfactory basis the proposed Association. By "*bona fide* architect," is meant men who have received the training and practice necessary to qualify them to perform satisfactorily the duties of an architect. This definition should not be understood to include builders, who may now and again draw the plan for a building. It is of the utmost importance to the success of the undertaking, that the meeting on the 21st should be representative of the whole Province. We therefore strongly urge architects in every locality, to make a little self-sacrifice if necessary, in order to attend. The Toronto Architectural Guild will leave nothing undone to render the visit of the architects not only profitable, but pleasant as well. The programme of the meeting will include a dinner at the Rossin House, where, over the good things of this life, the members of the profession will be afforded opportunity of becoming acquainted, and of discussing what objects the Association should seek to attain, and the wisest basis upon which it may work to accomplish its purposes. One of the most important matters to be decided at the meeting, will be the selection of executive officers to direct the affairs of the new Association. It is not too much to say that the success of the Association will depend upon securing men of the highest intelligence, judgment and energy, to fill official positions. It is most important, also, that the occupants of these positions should represent various sections of the Province, thus making the Association truly Provincial in its interests and character. Not only would we again request every Ontario architect to attend this meeting, but in the interval, would have him consider carefully everything which might tend to promote or hinder the success of the proposed organization, and come prepared to offer wise counsel, which will help to insure the complete success of the undertaking.

THE architects of Ontario, in deciding to form themselves into an association for the promotion of the interests of the profession, are wisely recognizing the principle that in union there is strength. It is beyond question that the time has come when the master builders and contractors of Ontario should also take action in this direction. Architects and master builders would then be in a position to work harmoniously together for the welfare of all engaged in the building trades, as has lately been the case in the United States. At the convention of the National Association of Builders of the United States just closed, some of the leading architects of the country were present, and by carefully prepared papers, assisted the builders to a solution of some of the difficult questions affecting their interests. Among such questions which received careful consideration at the convention, were: "Uniform Contracts," "Lien Laws," "Rules and Conditions for Estimating Work," "Permanent Arbitration," "Apprenticeship," the establishment of National Mechanical Trade Schools, etc., "Bureau for Furnishing Sureties on Builders' Estimates and Contracts," "Uniformity of Measurements and Uniform Size of Brick," "Insurance against Accidents to the Public."

The majority of these subjects might profitably engage the attention of an Association of Ontario master bu ders. The question of self-interest alone, if no higher motive will prompt the step, should be sufficient to induce the builders to organize It may fairly be supposed that if the architects and the master builders of Ontario had each an organizatinn, they might, by combining their efforts, remove the possibility of a recurrence of the extensive and disastrous strikes on the part of workmen which in the past have caused such loss to the community as well as to every person directly concerned. Organization can only be met by organization. The labor union is not dependent for financial support upon the locality in which it exists, but is part of an international organization, with an international fund at its back. On the other hand, the master builders in each city or town, having no national or provincial organization, are compelled to rely upon their local resources for means to carry on the fight. If a Provincial Association were formed, with ample financial support at its command, the unions would be more reasonable in their demands, and less eager to precipitate a strike if these demands should not be promptly and entirely complied with. By means of an association the relations of the master builder to the architect might be made more satisfactory than at present; an influence could be exerted to prevent manufacturers and dealers in builders' supplies from giving credit to contractors of no experience or capital, who, having nothing to lose, frequently take contracts at figures below the actual cost of the work, to the detriment of the honest contractor. In these and many other directions which might be mentioned, substantial benefits would accrue to the members of such an organization. We direct attention to the opinions of contractors in favor of rganizat on, which we print elsewhere. There are indications that the movement is taking root. We shall be pleased to publish the views of others on the subject, as we are convinced that the more thoroughly the proposal is discussed the greater will appear the desirability of putting it into practice

The statements submitted at the annual meeting of the Byam Manufacturing Co., manufacturers of specialties in builders' hardware, Hamilton and Toronto, held in this city on the 6th inst., showed the business done during the past year of the Company's existenes to have been of a most satisfactory character. The old board of directors was re-appointed, which in turn re-elected the old officers: William Bee, president; J. M. Smith vice-president; Sturgeon Stewart, managing director and secretary-treasurer.

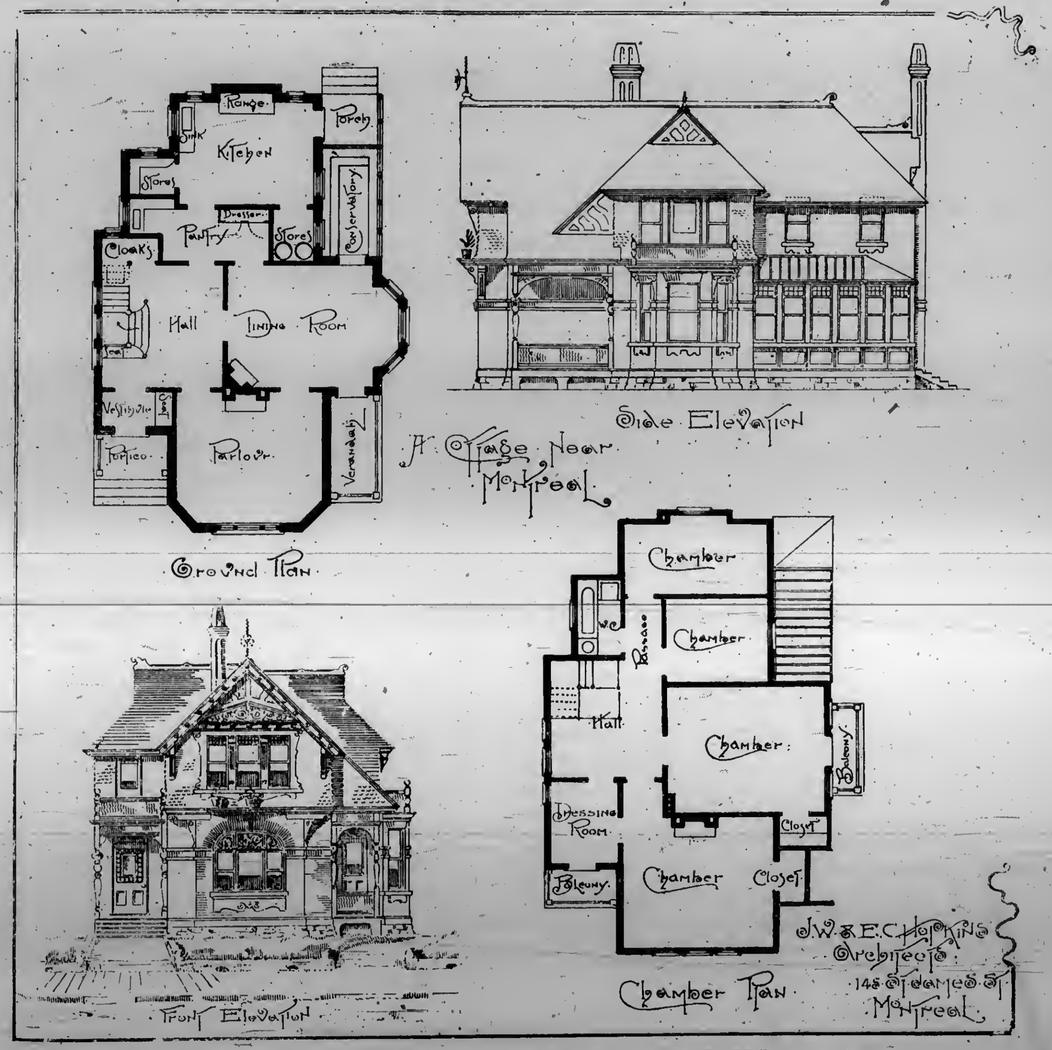
OUR ILLUSTRATIONS.

DESIGN FOR NEW UPPER CANADA COLLEGE, TORONTO.—MR. GEO. F. DURAND, ARCHITECT, LONDON, ONT.

THE sum of $130,000 has been appropriated by the Legislature for the erection of this building, which is designed to accommodate from 250 to 300 boarding students, and in addition, the requisite teaching staff and servants. The fronts are to be constructed of Credit Valley sandstone, in random course rock-face work, to the height of the basement—six feet—and red pressed brick above the plinth course, with terra cotta panels and string courses, the openings to be trimmed with rock-face red sandstone. The main entrance arcade is to be built of sandstone to the height of the first floor (25 feet), and is sparingly carved and ornamented, the columns of the arches being of polished red New Brunswick granite. The roofs are to be covered with slate throughout (there being no deck or flat portions), are of steep pitch, sub-divided by the dormer windows, lighting the attic, the sky line being varied by the use of gables and the grouping of the chimneys. The four main staircases are each eight feet wide in the clear, are easy of access from any portion of the building, and are enclosed between brick walls as a preventive to the rapid spreading of fire. The heating is to be by low pressure gravity steam, supplied by two boilers of wrought steel. The class rooms are heated by indirect radiators, with fresh air supply; these are placed under the windows, the vitiated air being removed through registers on the opposite side of the rooms leading into ducts connected with two large exhaust shafts, which are continually heated, and are over 80 feet high. The fresh, heated air is to be supplied at the rate of 200 cubic feet per minute to each occupant, at a velocity not exceeding five feet per second. Mr. Geo. F. Durand, London, Ont., is the architect.

A COTTAGE NEAR MONTREAL—J. W. & E. C. HOPKINS, ARCHITECTS, MONTREAL.

This cottage is to be built of red brick, terra cotta tiles, slate roof, and stone foundation. The interior will be finished in hard woods; hall in oak; dining room and parlor, cherry; chambers and bath room, chestnut. The cost, which depends considerably on the location, is approximately $3,800.



TORONTO BOARD OF TRADE COMPETITION.

THE following is Prof. Ware's report on the plans submitted in competition for the new Toronto Board of Trade building :—

DEAR SIR,—After a careful examination and comparison of the twenty designs which were sent in to me on the first of October for the proposed building for the Toronto Board of Trade, I have selected three which seem to me to be for one reason or another clearly the best.

These I herewith enclose to you for consideration by the Building Committee.

The task of selection has been an unusually difficult one, since all the sets of drawings which exhibited a marked superiority in any one respect, uniformly proved to be signally deficient in some other particular, equally important.

Nine of the designs present substantially the same arrangement of plan. They all show an area, or courtyard, in the north-eastern corner of the lot, enclosed by a building in the shape of the letter L. A corridor of similar shape runs through the middle of the building with offices on the outer side, lighted from the streets ; on the inner side of this corridor are two or three more offices lighted from the court-yard, and the lavatories, closets, staircase and elevators. The rooms for the Board of Trade are in the upper stories. In some of the designs the Restaurant is next to the roof, in some it is placed in the lower stories.

Two of the designs I send you exemplify these arrangements.

Five of the designs show an interior well, or light shaft, set against one of the party wall, some of them adding a smaller well, or ventilating shaft, set against the other party wall.

Neither scheme seems to have worked out very well.

Three of the designs show an area or external court, opening upon Yonge Street. Neither of these is sent to the Committee, for the lot seems to be too small for this device to be used to advantage. At any rate, all three of these plans afford less available floor-space than do any of the others. The irregularity of the shape of the lot, also, is in all of them, in spite of some very ingenious attempts to disguise it, exceptionally conspicuous.

Two of the schemes show an interior area, or light-well, with rooms all around it, and one which I enclose, shows no open space at all, the building covering the whole lot, and the centre part being lighted by a skylight.

In respect of external treatment and architectural style, thirteen have towers, twelve have steep roofs, in whole or in part, eight have the roofs flat, eight employ classical or renaissance details, six show more or less of Romanesque influence, and six are composed in a manner to which no name has as yet been given.

The elevations as well as the plans vary greatly in character and expression, as well as in merit. As I have already intimated, it happens unfortunately that the best plans do not have very attractive elevations, and that the most attractive elevations do not belong to very good plans.

In this state of things I am not able to recommend any of the designs, as they stand, for adoption by the Committee. The only service I can render them is to bring before them, as I have done, those which seem to me to possess substantial merit of one sort or another, hoping that they may find some among them so well suited to their ends that they will be disposed to recommit the drawings in question to their author for further consideration and amendment.

So far as concerns the general arrangement of the plan, I am disposed to agree with the chief part of the competitors in believing that the most obvious way of covering the ground is the best, namely, by building an L shaped building on the two outer sides of an interior court.

The design marked with "TWO CIRCLES," shows better than any other of those which follow this scheme how large a number of well lighted offices can be secured by adopting it. This design shows thirty-six offices, all of good size and shape, and covering together nearly fifteen thousand square feet. Even if one story were omitted so as to bring the design down to six stories, the office space would amount to over twelve thousand feet, which is as much as any of the good plans afford. The open area is sufficiently large, the stair-way and lavatories well lighted, and the halls and passages wide and open. This scheme is, moreover, the only one among them all in which the plan itself is noticeable for neatness and elegance of arrangement.

In this design the Restaurant is in the basement, the Board Rooms, which comprise a large circular hall, are in the upper story, and the safes are arranged in a stack which occupies the middle of the hall-way.

The design marked "TEN PER CENT" has most of the practical advantages already mentioned, but lacks elegance and style. The main difference, so far as concerns the distribution of the rooms, is this, that in this design the large hall of the Board of Trade is rectangular, the Restaurant is small and is placed at the top of the building, and the safes are scattered about in the offices. The amount of office space, both being regarded as six-story buildings, is about the same. The offices are in this building more numerous, but smaller and less desirable.

Unfortunately the external treatment of these two designs, though not without merit, does not seem to me to be, in either case, suitable or satisfactory. This is more to be regretted, inasmuch as neither of the plans is of such a character as greatly to influence the elevation, and in either case a different treatment might just as well have been adopted.

The rest of the plans are distinctly inferior, for the Committee's purpose, to the two just mentioned and, with a single exception, none of the elevations present any special features or combinations of features that it would profit the Committee to consider.

But the design bearing the title "UTILITY" (one of two thus designated), shows an external treatment so effective and original that it deserves to be urged upon the Committee's attention. It is seldom, in my opinion, that one comes across a design so noticeable out of the common course which is at the same time so simple, rational and dignified. It was, moreover, to my mind, just the character suited to a business building which is at the same time the seat of a public institution.

The plans which accompany these elevations show about the same amount of office space as the other two. But the accommodation they offer is inferior, and the tortuous and eccentric arrangement of the rooms and passages forbid its serious consideration.

These then—the "TWO CIRCLES," "TEN PER CENT." and "UTILITY,"—being the three designs which, from one point of view or another, I find to be the best among those submitted to my judgment, I in turn submit them to the judgment of the Committee. To the foregoing comments I venture to add the following recommendations.

1. If the Committee find the general arrangement of the plans marked with "TWO CIRCLES" is such as to serve their purposes, and agree with me that its technical merits in respect of simplicity and elegance in the distribution of parts are of a high order, I recommend them to adopt this plan as the basis of their future operations.

If they further agree with me in that the external treatment of the design is unsuitable and unsatisfactory, but that the skill and professional resources manifested in this set of drawings are such as to promise, on a second trial, a happier result, I recommend that the drawings be returned to their author with a request to present a new design for the exterior under such further instructions as the Committee may give.

Such an adoption of the general scheme would not, of course, preclude the Committee from changing the plans in matters of detail, such as omitting the tower, using the basement for offices instead of for a restaurant, putting safes into the rooms, or substituting an oblong hall, situated upon one of the side streets, for the circular room shown in the plans. This last is a feature common to most of the designs sent in, as well as to two of those here presented, and does not constitute, in my judgment, a special feature of those designs, original as to this competition, in any way to interfere with the Committee, or the author of this design, incorporating it into his composition, if it is desirable to do so.

2. The design marked "TEN PER CENT." has, to my mind, no advantages of plan over that just spoken of, and if the Committee agree with me in thinking that the elevation is not specially suitable or attractive, I think they may dismiss this design from further consideration. Should they, however, differ from me on this point, and find the elevation to be just what they would be best pleased to erect, then I should say that these plans, though not so good as the others, were good enough, and that the Committee had better adopt this design, substantially as it stands. This they would be warranted in doing, in spite of obvious faults in the details of the arrangement, since these defects could easily be removed by further study.

3. If, however, the Committee do not incline to this course, and if they agree with me in regard to the great merits of the design marked "UTILITY," in its external treatment, then I recommend that they take such measures as may prove practicable to combine this elevation with the other plans. Fortunately there is nothing in this elevation to prevent its fitting the plans of the design marked "TEN PER CENT.," if they were slightly modified, or even fitting the plans marked with the "TWO CIRCLES," if the large circular room were given up, and a rectangular room adopted instead, as has been suggested. I am, very respectfully,

Your obedient servant,
WILLIAM R. WARE.

Columbia College, New York, November 3, 1888.

P.S.—The envelopes containing the names of the authors of these plans are herewith enclosed, with the seals still unbroken. I have no knowledge or belief as to their identity

W. R. W.

DEAR SIR,—In the report which I had the honor of sending to you two days ago, I recommended your Building Committee, in case they found the plans belonging to the design marked with "TWO CIRCLES" suitable and convenient, to adopt them as a basis of procedure, and to ask their author to present different elevations, in accordance with such instructions as the Committee might frame. This I urged on the ground that the ability and resources displayed in this set of drawings were such that the Committee might safely place themselves in the hands of their author, at least provisionally, in spite of the unsatisfactory treatment in them of the exterior of the building.

I ought to have added—I ought to have remembered to add, for the point is a familiar one—that further evidence as to the professional resources at the command of the author of this design might and should be obtained by opening the envelope containing his name. This the Committee are perfectly free to do whenever they have reached a point where they cannot proceed intelligently without knowing who is who. They have never undertaken to come to a final choice in ignorance of whom they were dealing with. The incognito provided for in the instructions has fully answered its purpose already, and I ought to have suggested to the Committee to break the seals as soon as the question of the standing or resources of either competitor was brought before them, as it was by my first recommendation.

Please consider these suggestions as forming a part of the recommendations of my report, and believe me to be very respectfully,

Your obedient servant,
WILLIAM R. WARE.

New York, Nov. 5, 1888.

A CRITICISM, ETC.

HAMILTON, March 6th, 1889.

Editor CANADIAN ARCHITECT AND BUILDER.

I HAVE much pleasure in congratulating you on the improved size and general appearance of your publication, and have no doubt that the profession, students and other subscribers will appreciate your efforts.

Excuse me if I criticise the illustrations of your last number. Your remarks on the arrangements of the Town House, page 16, are just and terse. There being no chamber plan, I would suggest to future contributors that they furnish basement and chamber plans, as also elevations to a scale, or otherwise one is induced to think that the perspective has been "cooked" to make a picture, and so deceive, which is at all times condemnable.

The design for the new Board of Trade building is very creditable, and the plans well considered. I have no doubt the members of the Board of Trade will feel proud of the building when it is completed. I notice, however, that the point of view has been taken too far away; the view can never be seen as such, unless I am mistaken as to the locality. I recollect the old Board of Trade building as being situated at the junction of two narrow streets. If the perspective has been made for a picture, it is not honest to do so. Architects, I am sorry to say, are too much given to this kind of deceit, which mitigates against them and the profession. Nevertheless there are some good points in the design, which if carried out, will be an advance in the right direction. I am pleased with the lecture and remarks therein, by Mr. Gambier-Bousfield, on the "Responsibilities of Students." I trust he will continue these lectures. They should be an incentive to students to carefully study the valuable works in the library now so close to their hands in Toronto. Let me assure the youthful students that their youth is the most precious period of their existence. They will find their enthusiasm will wane and dull when they come in contact with the mean and sordid spirit in this life, unless they lay a deep, solid foundation of love for their profession which will carry them forward and uphold them through all the troubles they will have to meet incident to contact with this venal business age.

I am gratified by your remarks anent so-called competitions, and the treatment meted out to the profession by individuals and corporations who in an ordinary business transaction would doubtless scorn to be dishonest, but who, in the matter of these so-called architectural competitions, are trying to obtain by dishonest means the knowledge and labor of members of the architectural profession. But, sir, the profession is to a great extent to blame, for are there not self-styled architects always on hand to propagate these evils? Until the architects unite as a common brotherhood there is no way that I can see to successfully fight this and other kindred injustices.

We have had three meetings of the most prominent architects in this city, and appointed a committee to draft constitution and by-laws to govern an association. We are determined with the aid of our brother architects in Ottawa, Toronto, and elsewhere, to raise the status of the profession to its proper level.

F. J. RASTRICK.

THE WOODSTOCK COMPETITION.

TORONTO, March 7th, 1889.

Editor CANADIAN ARCHITECT AND BUILDER.

I send you my protest against the manner in which the architectural competition for Woodstock Court House is being conducted.

Yours truly,
ROBT. OGILVIE.

HAMILTON ARCHITECTS ORGANIZING.

A CORRESPONDENT writes as follows : The architects of Hamilton have had two meetings and formed an Association similar to the Ottawa Association, with F. J. Rastrick, President ; Jas. Balfour, Vice President ; W. A. Edwards, Secretary-Treasurer, and Messrs. Mulligan, Hills, and Brass as council. Mr. Townsend, of Toronto, was at the last meeting, and explained the objects of forming a Provincial Association. Architects here are all in sympathy with the movement, and a number will attend the meeting in Toronto on the 21st March, when I trust we will see our way clear to form a strong body.

QUERIES AND ANSWERS.

(Reply to Query No. 1.)—The factor of safety for wood beams should not be less than ⅙ the breaking weight. To find the breaking weight of a wood beam, multiply the square of the depth in inches by the breadth in inches, and by the constant for the kind of timber, and divide by the square root of the length in inches ; the result will be the breaking load of the beam in pounds.

The constant for oak, 1.700 ; clear pine, 1.300 ; rough pine, 1.100.

To find the required depth for a beam, when supported at both ends to sustain a given load with safety, multiply the square of the length in feet by the weight in pounds and by C, and divide by the breadth in inches ; the cube root of the result will be the required depth of the beam in inches.

Let C represent .013 for oak, .01 for clear pine, and .009 for rough pine or hemlock.—WILM KNOX.

(Reply to Query No. 2.)—Let "Lux" take one pound of iron filings and 5-16 of an oz. of sal-ammoniac, and make them into a thick paste with water.—SUBSCRIBER.

(Reply to Query No. 3.)—Use muriatic acid, painted on with a brush and let it stand for an hour or two ; the old putty will become quite soft and easily run over.—PAINT BRUSH.

(No. 4).—Will you kindly inform me through the column of your paper, whether fusil oil will remove varnish from woodwork, so as to allow of the woodwork being stained another color, or can you recommend anything that will remove varnish, and very much oblige,

HENRY LUCAS.

DRAFT CONSTITUTION OF PROPOSED ONTARIO ASSOCIATION OF ARCHITECTS.

THE Toronto Architectural Guild has submitted for the approval of architects throughout the Province of Ontario, copies of the following draft constitution for the proposed Architectural Association :—

SECTION I.—*Name.*—The name of this organization shall be "The Ontario Association of Architects."

SECTION II.—*Objects.*—The objects of the Association are : To unite in fellowship the architects of the Province of Ontario, to combine their efforts so as to promote the artistic, scientific and practical efficiency of the profession, and to cultivate and encourage the study of kindred arts.

SECTION III.—*Membership.*—The Association shall consist of Fellows and Honorary Members.

SECTION IV.—*Qualifications.*—Any architect engaged in the honorable practice of the profession in the Province of Ontario may become a Fellow of this Association. Honorary Members of this Association may be elected upon the recommendation of the Board of Directors, but all Fellows of the Association shall become Honorary Members when, after three years honorable standing as Fellows they resign the practice of architecture. Honorary Members shall not be entitled to vote, nor be eligible to office, nor shall they be assessed for dues or initiation.

SECTION V.—*Officers.*—The officers of this Association shall be a President, three Vice-Presidents, a Secretary, a Treasurer and five Directors. All the officers shall form a Board of Directors for the care of the property and management of the general welfare of the Association, and shall report at each regular meeting.

SECTION VI.—*President and Vice-President.*—It shall be the duty of the President to preside at all meetings of the Association. In his absence the chair shall be taken by the first Vice-President ; in the absence of the first Vice-President by the second Vice-President ; and, in the absence of the second Vice-President, by the third Vice-President.

SECTION VII.—*Secretary.*—It shall be the duty of the Secretary to take the minutes of the meeting and conduct the correspondence of the Association, subject to the Board of Directors.

SECTION VIII.—*Treasurer.*—It shall be the duty of the Treasurer to collect all funds, and disburse the same on the order of the Secretary when countersigned by the chairman of the Board of Directors.

SECTION IX.—*Amendments.*—The Constitution may be amended by a two-thirds vote of the Fellows present at any regular meeting.

SECTION X.—*Status of Architect.*—The status of an architect is hereby defined as follows : An architect is a professional person whose sole ostensible occupation consists in supplying data preliminary to the material construction and completion of buildings, in exercising administrative control over the operations of contractors supplying material and labor incident to the construction and completion of buildings, and in officiating as arbitrator of contracts, stipulating terms of obligations and fulfilment between proprietor and contractor.

SECTION XI.—*Failure to Pay Dues.*—Should any member fail for one year to pay his dues, the Board of Directors may at its discretion, drop his name from the roll. Should charges of misconduct be preferred against any member, they must be made in writing, and be signed by the person making such

charges ; whereupon the Board of Directors, at its next meeting, must take the matter up, and the said Board may, at its discretion, drop the name from the roll, and the decision of the Board shall be final and absolute. The member against whom the charges are made shall, however, have the right to be heard in his own defence.

OTTAWA INSTITUTE OF ARCHITECTS.

ON February 19th was held the first regular annual meeting of the Ottawa Institute of Architects, orginally set on foot for the purpose of improving and raising the status and efficiency of the profession of architects. This society, before completing its organization, drew up a comprehensive constitution and by-laws, suitable to the requirements of the locality, and from the commencement has looked forward to legal recognition in the Province, a by-law to that end being amongst its earliest regulations, requiring the executive to keep the object constantly in view.

Owing to the illness of Mr. Thomas Fuller, President, Mr. K. Arnoldi delivered an address from which the following extracts have more than local interest :

"Our members may not altogether realize the important position that such an Institute must attain ; how by proper management it must become a real and substantial advantage to every individual member ; and a position achieved for it that will bring appreciative approbation from the general public, placing at a positive disadvantage any architect attempting to practise in our midst who may not be one of us. Without association we might indeed be acquainted more or less, but we all know, in such a state of affairs, the antagonism and jealousy that seem fated to exist between members of the same calling—how often through misunderstanding, wrong motives are imputed, and any way, a miserable competition carried on, certainly not to the advantage of any one. Meeting together, acquaintanceship will remove such asperities, and we shall look to one another for counsel and aid in solving such difficult problems as may present themselves.

"This is how I interpret 'maintaining a proper standard of professional ethics'.

* * * * * * * *

"I will now present to you the views I entertain as to what our future programme should be : Till now, our energies have been principally devoted to the perfection of our organization. In this we may congratulate ourselves, having almost every practising architect in the city on our roll, and I would like to make our Institute of such importance that no architect will be able to afford to remain outside. Of the numerous guerillas, they will continue to exist. Their status has been fully considered by your council, and the inadvisability of admitting them to membership has, after mature deliberation, been decided upon.

"Now, having associated ourselves for the decent practice of the profession, and having adopted the lowest scale of charges known amongst qualified architects, it would be a pity for it to go abroad that we have formed a "combine," which I have no doubt will be the title some may be inclined to apply to us.

* * * * * * * *

"In any action affecting us, we should be the first movers. For instance, the city of Ottawa requires a building by-law, therefore the corporation should be communicated with, and the co-operation of the Institute offered towards its perfection, our influence being used to see that the Inspector under it is a person in whom we have confidence. This is a matter that if not attended to, may be the source of much annoyance to our profession.

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"Our by-laws as to affiliation must not stop at a simple exchange of courtesies ; the object to be kept in view must be the recognition of ours as a close profession, similar to lawyers, doctors, land-surveyors and civil engineers. This will require a great deal of labor, and the co-operation of all now practising in the entire Province. Our Toronto *confréres* are moving in the matter, and we must lend them active assistance. Much time and some expense will be involved in this, but to carry out the objects of our association we should be prepared to spend both time and money, since in all the matters I have pointed out, we can depend on receiving a return that will amply repay us.

"Our worthy first president, in relinquishing his office, does so from conviction that for him to hold this position would be to defeat the objects we have in view. He considers that every officer should give time and active work to the interests of the Institute, and these he does not find himself able to give. I would therefore express the hope that the officers for the ensuing year, to be elected at this meeting, will be prepared, in exercising their functions, to attend closely to the interests of our society—will be prepared to sacrifice some of their valuable time in the common interest—so that with the co-operation of our own members and the architects of the Province generally, we may attain by the next session of the Provincial Parliament a position or status for our profession which it has not previously attained in any other part of the British or American world."

Mr. King Arnoldi was afterwards elected president for the year 1889–90.

NATIONAL ASSOCIATION OF MASTER BUILDERS.

THE third annual convention of the National Association of Master Builders of the United States, was held in the Franklin Institute, Philadelphia, Pa., on Feb. 12th, 13th and 14th. The gathering embraced about three hundred builders and contractors from all parts of the United States. A synopsis of the proceedings at this convention should prove interesting and instructive to Canadian master builders, especially in view of the expressed desire for a somewhat similar association for the Province of Ontario. The Secretary's report showed that there are in the United States and Canada 445 exchanges directly connected with the building interests.

It was resolved to endeavor to secure amendments to the lien laws in each state, so that they might only protect actual personal labor performed upon the property liable to attachment in amount not to exceed the value of twenty-four days work for each individual entitled to protection.

The report of the Committee on apprenticeship, recommended the following definition of the training and qualifications of a regular journeyman in the building trades :

1. The serving of a regular course of instruction in a mechanical trade school, and graduating therefrom with a certificate of proficiency granted by the same, under rules and regulations approved by a committee of master mechanics who may unite in the management of the said school.

2. The preliminary training in the trade school to be followed by a term of practice with an employer on actual work, this term to be at least one year less than the usual term of apprenticeship by virtue of the holding of a certificate of proficiency granted by a mechanical trade school. During this term of service the young man to be known as a "junior."

3. Finally, completion of the education of the mechanic to be acknowledged after a proper examination has been passed before a board of examiners appointed for the purpose by the association of builders to which the employer may belong, or to whom the junior may apply for examination by the issuance of a certificate by the said association, which shall state that the holder has passed through the prescribed course at the trade school, and the term of practice with an employer (name and location given) with satisfaction and credit, and is entitled to be received by all builders as a journeyman. Any young man who has received the "certificate of proficiency" from the trade school may apply for the second examination before the board of examiners, and, if adjudged by them to be old enough, strong enough, and competent, may receive a special certificate, which shall state the facts in the case

A special Committee was appointed to take this matter in charge and persistently agitate the proposed reform.

It was resolved that the convention shall use its influence to secure the passage of a law for the punishment of any person or association hindering an American youth from learning any trade.

Papers were read by James John, of Chicago, on "Plastering and Stucco Work ;" by Samuel J. Cresswell, of Philadelphia, on "Iron Work, Past and Present ;" by, John T. Tucker, of New York, on "Masonry;" and by W. H. Sayward, of Boston, on "Builders' Exchanges, Their Opportunities and Advantages." Addresses were delivered also on "The Metric System," by George Eastburn, M. A., and "The Relation of the Architect to the Builder," by U. P. Hatfield, of New York.

The following officers were elected : President, Edward E. Scriber, of St. Paul, Minn.; First Vice-President, John J. Tucker, New York ; Second Vice-President, A. McAllister, Cleveland, Ohio ; Secretary, William H. Sayward, Boston ; Treasurer, George Tapper, Chicago.

The next meeting of the Association will take place at St. Paul, Jan. 20, 1890.

Mr. John Miller, of Toronto, won the prize of $50 for the best essay on heating recently offered by the editor of the *Metal Worker*.

A PROVINCIAL ASSOCIATION OF BUILDERS AND CONTRACTORS.

THE following letters have been received on the subject of the formation of a Builders and Contractors' Association for the Province of Ontario :—

BELLEVILLE, March 7th, 1889.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—Your suggestion regarding the formation of a Provincial Association of Builders and Contractors is one of the utmost importance to every builder and contractor, and should be dealt with at the earliest possible moment. In a short letter it would be impossible to enter into a discussion of the subject, and I would therefore suggest that a convention be called at some central point (Toronto, perhaps, would be as convenient as any) to deal with the whole matter. I am glad you have taken this matter in hand.

Yours truly,

THOMAS HANLEY.

BOWMANVILLE, March 11th, 1889.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—I am in full sympathy with your views in regard to the formation of a Provincial Association of Builders and Contractors, and have often wondered why no effort has been made before to form an association of the kind. I have talked the matter over with other builders and contractors, and find that they all are favorably impressed. I would be willing to assist all I could to form an association. Hoping that your efforts in this direction will have a successful issue, I remain,

Yours truly,

WM. BUNNEY,

of the firm of Munson & Bunney, contractors and builders.

HAMILTON, March 11, 1889.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—With regard to your suggestion as to the benefit likely to be derived from a Provincial Association of Contractors, it is a matter which in my opinion is of grave importance, and likely to open up a great many questions. The principle one is the attitude of employees at the present time. If continued in, it must inevitably result in some kind of a combination of contractors, and the questionable benefit or good resulting from such combinations. As one evil begets another, so will the aggressive action of the trades unions be likely to bring into existence combination on the part of employers, with perhaps a mission of usefulness in curbing to some extent the sellish legislation of the trades unions in regard to such matters as the apprentice system for instance, which at present limits almost to exclusion the opportunity of young Canadians to learn trades. The result is, that the ranks of skilled workmen in the building line are largely filled by old country mechanics, who are allowed in their own country to learn such trades as they may have capacity for. They come out here and fill the places our own young men are heirs to, but are practically prohibited from fitting themselves for.

The better remedy for this appears to me to be the establishing of government trade schools, where such a knowledge of trades may be gained as will fit our young men with very little after training to take their place as mechanics. If such schools cannot be brought into existence by the government, here is one purpose which might be served by a Provincial Association of Contractors, whose united action would no doubt be influential in starting such schools and gaining the support of municipalities or government to continue them.

An Association could be of great benefit in many other ways, provided the proper material could be got into it. Here is where the principle difficulty is to be met with ; and I do not well see how it is to be overcome. To engage in building the smaller class of buildings, requires but little capital, and less plant. The step from a journeyman to a contractor is the simple matter of getting a small job which a man may figure up after supper in the evening. He will probably be a contractor next morning, oftener through guessing than by any real knowledge of the value of the work he has taken. True, he may turn. out to be good man, but good or bad, he would have to be counted in, in forming an Association. There is no standard at present by which fitness for this business can be regulated, and unless men can come up to a certain standard that their quality may be known, they could not be considered safe members of an association. Instead of giving strength to it, they would be a source of weakness, and would prey upon it. Still, as I said before, they would have to be included, as the association of a portion of the contractors who might live up their agreements, would be handicapped by the fact that others not included in the association could do as they considered most expedient.

I have not more time at present, but would like to see the views of abler men than myself on the matter.

Yours truly,

M. A. PIGOTT,

Contractor.

EXTEMPORIZED SCAFFOLDING.

BY OWEN B. MAGINNIS.

BUILDERS throughout the country in their daily practice, find it necessary to erect temporary scaffolding, and in doing so usually employ scrap-stuff or some of the material they intend using in the building. These scaffolds require to be handy, take little time in constructing, and must at the same time be strong and suitable for safely sustaining men and material. With a view to assist builders to a rapidly formed system of scaffolding the following is submitted :

The handiest, though not always the most applicable form, is the bracket scaffold, which consists of a number of permanently framed timber brackets, placed on a line, at a convenient distance apart, on which to rest the planks. Each bracket measures about 4 x 4 feet, and is framed together of 1½ inch, or 2 x 3 inch sound spruce, for lightness and strength. It is held in its place on the frame wall by a ¾ inch round iron bolt, which is forged long enough to pass through the boarding and studding, and a 2 inch block, which spans two studs inside. The end of the bolt is tapped and the bracket can be screwed tight against the boarding by a screw, key and washer. The bolt is fastened to the bracket under the horizontal arm, after passing through a hole in the vertical arm, by being forged flat and bored and bolted to it with ¾ inch bolts which are countersunk on the upper side of the arm, to permit the plank to rest level on it.

All that is required to affix these brackets to the building is to bore a hole for the bolt, and they hang quite safe and will sustain the weight of any ordinary quantity of boards or siding. They can also be put up for boarding, and taken down as each strip of covering is finished.

In the absence of the above, a good safe scaffold can be quickly made of joists and ⅞ inch covering or roofing boards. Cleats gained out the thickness of the bracket board are first got out, and to the gain a bracket piece is well nailed ; the outer end of the bracket piece is next nailed square to the side of a sound joist at the required height, and the three together are then nailed by the cleat through the wall boarding into a stud. If much weight is to put on the scaffold, blocks should be nailed under the bracket piece on the vertical joist to take the strain off the nails, especially when hemlock joists are used for uprights.

A very simple way of gaining a strong scaffold is to lay joists on their edges across brackets no more than ten feet apart, with ledgers placed across their upper edges, on which the planks rest. It is also very convenient when the scaffolding planks are not forthcoming, and boards are substituted, and it saves a double thickness of boards. This scaffold is braced diagonally, and in order to increase its height, another joist can be placed on the top end of the bottom one, and the joist secured by nailing a ⅞ cleat across it.

A useful and easily removed scaffold for putting on roof boarding consists of simple brackets nailed through the roof boarding into the rafters beneath, with a plank laid across them to stand on.

When the boarding is all on, and the window frames and cornice set, one of the next accessories is a handy shingling stage. After the first courses have been laid, it is usual to form a scaffold out of joist laid against the roof on their edge, and fastened by shingles. The best way, however, is to shingle the joist in, by nailing the shingles to it, and fastening them in a course of shingles, keeping those nailed on the joist down, so that the joist will come below the butts of those in the course. These can be cut off when the scaffold is no longer needed, and the roof will not have been in any way injured.

The handiest scaffold which a carpenter and builder can adopt for setting cornices over store fronts, consists of a piece of 8 or 9 inches x 1 inch spruce board nailed square across near the ends of two joists at the desired height, far enough apart to permit each joist to stand respectively, allowing for the difference in their levels on the store floor and sidewalk. When the number of these frames needed is nailed together, they are placed in position, braced diagonally, and the plank laid across them. This method makes a very convenient, firm scaffold, and costs very little time.

Messrs. Harding & Seathorne, of London, Ont., contractors for the construction of the Goderich water works system, have successfully completed the work.

HAMILTON.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

SINCE my last report, owing to the cold weather having set in rather severely, all building operations have been suspended, but as there are quite a number of buildings yet unfinished, on resuming work there will be plenty of employment for all until the new spring business comes on. As yet it is impossible to form any idea as to the extent of the spring operations, for as a general rule, parties intending to build either in spring or fall, do not place their orders in the hands of the architects until the season is well advanced, and then all is hurry and rush to get the plans prepared and the contracts let, so that the building will be completed on a certain date, and in most all cases, the time allowed is unreasonably limited.

This is certainly not a prudent way of doing business, and is disadvantageous to all parties concerned. The architect has not the proper time to mature his plans. The proprietor in his limited decision, requires alterations and extras; and the contractor being so bound up to time, cannot execute the work in as good a manner, as if a reasonable contract time was allowed. This has always been a general cause of complaint among architects and contractors, and one which it would benefit the parties most concerned to seek to have remedied. I have nothing to report from the Building Inspector's book, as there have been no new entries made. But I am glad to be informed that owing to very frequent complaints having been made, there will be proper attention paid in future to having all new buildings properly recorded.

The hot air furnace is rapidly taking the place of the heating stoves in the dwelling houses now erected. This is probably a step in the right direction, providing careful attention is paid to ventilation. Here lies the great danger, for where the house is heated with hot air, the stove pipe holes, when such exist, may be closed, and the fire place covered up, leaving no exit for the vitiated air. Of course proper expert attention to ventilating and heating will obviate all danger, but it can be plainly seen in many instances where furnaces have been introduced, that expert care in this direction has not been used.

OTTAWA.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

THE CANADIAN ARCHITECT AND BUILDER in its new robes must have been a pleasure to its numerous subscribers and readers. It is to be hoped that with the commencement of the third volume still greater improvements will be made. This can only be accomplished by the architects and builders throughout the Dominion taking a lively interest in its welfare, and endeavoring to advance its interests in every way possible.

On the evening of January 15th, the architects of Ottawa held a meeting for the consideration and adoption of the constitution and by-laws of the proposed Ottawa Institute of Architects. After having been carefully read over, and some alterations made, they were finally adopted. Eighteen architects signed the members' roll binding themselves to faithfully adhere to the constitution and by-laws of the Institute. The election of officers was then proceeded with, and resulted as follows:—President, Thos. Fuller; Vice-President, K. Arnoldi; Secretary, A. M. Calderon; Treasurer, J. R. Bowes; Executive Council, H. H. Horsey, D. Ewart, K. Arnoldi, R. Surtees, J. R. Bowes, A. F. Alexander and A. M. Calderon. The Association meets monthly, when questions relating to the interests and advancement of the profession will be discussed. The architects consider they have accomplished a great deal in thus being organized, and each individual member expects to derive a great deal of benefit from the institution. It is also proposed to submit differences between architects and contractors to the Institute for adjudication, if such arrangement can be made with the contractors, as a great deal of unnecessary legal expense may thus be saved. It is to be hoped the architects of other cities in the Province will form similar organizations and all become affiliated. If this is done, there is no reason why an Act of Incorporation should not be granted at the next session of the Ontario Legislature, as the Hon. Mr. Ross, Minister of Education, is favorable to the idea. It is to be hoped that through the columns of the CANADIAN ARCHITECT AND BUILDER, you will make every effort to have the Association formed and a charter granted as soon as possible. I have no doubt but that the Secretary of the Ottawa Institute would be happy to furnish a printed copy of the constitution and by-laws to any architect applying to him.

It is gratifying to learn that the difficulty between the architects and builders of London, in regard to the form of contract, has been amicably settled. There is no reason why an uniform contract should not be adopted by the architects and contractors throughout the Province. This is one of the points that could be arranged if an Architectural Association was in existence. A contract, drawn up by a joint Committee of Builders of the National Association of Builders of the United States and Committees of the American Institute of Architects and the Western Association of Architects is now being almost exclusively used by the American architects and builders, and seems to give general satisfaction.

About fifty members of the Contractors' Union, of Montreal paid Ottawa a visit recently. They were met at the station by the Mayor and principal contractors and driven to the Grand Union Hotel, where they were presented with an address by the Mayor, and granting them the freedom of the city. They were afterwards tendered a banquet by the city contractors, the Mayor presiding. The Ottawa contractors are discussing the advisability of forming a similar Union.

Very little work has been let out as yet for 1889. F. Alexander, architect, has let contracts for a brick residence for Alderman Stroud, to cost $7,000; Arnoldi & Calderon, architects, have let contracts for a Bank of Ottawa building at Carleton Place, to cost $13,000; J. R. Bowes, architect, has let contracts for a free stone residence for N. Charlebois, to cost $12,209; the congregation of the Dominion Methodist Church are receiving tenders for a lecture hall to cost about $12,000.

The architects appear to have plenty of work on the tables, and anticipate a brisk season, but clients are slow in getting the work let out.

MONTREAL.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

THERE is very little to report in the way of building transactions. Things architectural may possibly boom in the spring, but at present there is little sign of activity. Architects, contractors, and the public at large, suffer from the annual "corner" in bricks, and no one is inclined to build until the quotations for summer brick are out.

There is a tremendous rush to finish the numerous gigantic piles of offices which have been in course of erection during the past year in time for the fated 1st of May.

Mr. W. T. Thomas is engaged on plans for a mansion for Mr. Duncan McIntyre, which will be commenced this summer.

A new Methodist Church is to to be erected in St. Gabriel village on Wellington St., from designs by Mr. W. McLea Walbank. It is intended to commence operations at once.

A temporary architectural *furore* was caused by the designs sent in for Messrs. Morgan & Co.'s colossal establishment up-town on St. Catharines St. Ten designs were sent in, and it is a pity the public will not be allowed to judge of their merits by their being publicly exhibited. As it was, the unsuccessful competitors had their plans promptly returned without note or comment, the design of Mr. J. P. Hill being selected. The buildings will cost approximately $150,000, and be completed by May 1st, 1891.

Apropos of the above I enclose you my opinion of competitions generally, having through dearth of prose matter (like Mr. Silas Wegg) "dropped into poetry," as follows:

An architect sat in his old arm chair—
T square and drawing board both were there—
With "Whatman's Imperial" mounted with care
He was equally ready to do or dare,
But he rubbed his knee
As he sighed "ah me!
What sort of a job will my next one be?

(Reads advertisement.)

"Be it known to all whom it may concern
That the worshipful Borough of "Butter-on-the-Burn"
Three prizes will give for designs for a churn,"
"What the deuce do they want with a churn?" quoth he.
"Now I'm all up a tree,
(For between you and me),
A churn in full action I never did see!"

An "ancient example" he anxiously sought,
And by his office boy neatly was caught
In making a copy of something he thought
Was genuine classic. "Hello! may be
This will suit to a T,
(Tho' between you and me)
It's *meant* for a well with a windlass," quoth he.

Elevations he hasteneth now to prepare,
A perspective he etcheth, as much as he dare
A specification he copieth fair;
And he slappeth his knee,
And he crieth with glee,
"Now I'm certainly sure to be one of the three!"

For weeks he waiteth—no news can he gain—
"No news is good news," he quoteth in vain,
Till the following drives him completely insane:

(Reads letter.)

"Dear Sir: We herewith return your drawing,
For we found if we kept on much longer see-sawing,
We somehow might possibly get into lawing—
After getting as pretty well mixed up as mortar.
We withold the prizes—
Though all shapes and sizes,
Not one of your churns will make butter out of water!!!"

P. B. W.

It is computed that if one horse can draw a certain load over a level road on iron rails, it will take 1¾ horses to draw the same load on asphalt, 3½ horses to draw it on the best Belgian block, 5 on the ordinary Belgian pavement, 7 on good cobblestones, 13 on bad cobblestones, 20 on an ordinary earth road, and 40 on a sandy road.

THE BUILDING OUTLOOK FOR 1889.

GALT, ONT.—Building operations here do not look very bright at present.

OWEN SOUND, ONT.—Building outlook, fair. Not many very large buildings under contemplation so far.

BERLIN, ONT.—Building operations during the coming season are expected to exceed those of last year, which were very large.

ST. CATHARINES, ONT.—The outlook for building is fair; no great push is looked for; quite a number of alterations and improvements are proposed.

DESERONTO, ONT.—Building operations have already commenced, and the probabilities are that many new houses will be put up the coming season.

KINGSTON, ONT.—The outlook for the approaching building season here promises very fair, as good or better than last year. There is more work out now than last year at the same time, and more in the different offices under way.

ST. THOMAS, ONT.—There will be a fair amount of building done in the city during the coming season. There will be a very large amount done among the farmers in the vicinity, fully as much as during the past two or three years put together.

COLLINGWOOD, ONT.—The building outlook is not of the best; tenders are being asked for a general and marine hospital to cost about $30,000; a by-law has been passed to raise $20,000 for a new town hall; one or two stores are spoken of, also some dwellings.

HAMILTON, ONT.—The building outlook here is considered good. A great number of cheap buildings have been contracted for; in fact, if all is true that I hear, the city will be boomed this summer. I don't think the architects as a rule are busy, as most of the buildings are in speculative builders' hands.

GUELPH, ONT.—Ten contracts have already been let for new houses to be built this spring. From the number of contracts already awarded there is promise of considerable activity in building operations in the spring. Amongst the prospective erections will be the new passenger station of the G. T. R., and a new skating rink.

LONDON, ONT.—Building prospects for the coming season are not very bright. A few small contracts have been let. A block of stores on Richmond St. and a large hotel on York St. are contemplated, and the Canadian Savings & Loan Society are about erecting new offices on Richmond St. The architects appear to think there will be plenty of work, and our principal builders are hopeful.

BROCKVILLE, ONT.—Building operations do not tend to be very brisk; no work has been yet let, although plans have been prepared for a number of residences and several summer hotels, including a 150 room hotel on Rideau Lake, probable cost $32,000, and addition to a summer hotel at St. Lawrence Central Park, containing 20 rooms, probable cost $3,600. The Leeds and Grenville County Court House will also be remodelled and a new fire hall built.

REGINA, N. W. T.—The prospects of a busy summer are very good. A new Methodist Church and a large school building to cost about $12,000, are contemplated. Operations will begin as early as possible on the police riding school, and also on the Indian Industrial school. Contractors are expecting the plans for the proposed gubernatorial residence, will be ready soon. A number of handsome substantial blocks are to be erected, and also several residences.

STRATFORD, ONT.—There is every appearance of a good trade this season. Already a large number of contracts are let, among others, Worth's block—4 stores and public hall, to cost $14,000; alterations to Dr. Kilroy's residence 'Glebe House," to cost $5,000; houses for Jas. Corcoran, cost $3,000, H. M. Johnson $3,000, and John Hogarth $2,000; also one for J. R. Kilburn, architect, to cost $3,700. A large number of smaller contracts ranging from $1,000 to $1,500 are also let, and from present appearances the builders will have a busy season.

FAILURE OF THE SUSPENSION BRIDGE AT NIAGARA FALLS. *

THE members of this Society will be glad I am sure to be informed of the circumstances connected with the recent failure of the Suspension Bridge at Niagara Falls, which I constructed for the Bridge Companies, and which was opened for traffic on the fourth January, 1869, just twenty years ago. All the particulars relative to the first construction of this bridge were published in a report made by me to the Directors, dated 1st March, 1869, and this report with illustrations was the same year given in "Engineering," in England.

The span of this bridge is 1268 feet between the points of suspension at the towers. The roadway was 10 feet wide, providing a single track for carriages, and a path for foot passengers. The roadway was supported by two cables, each cable composed of seven wire ropes, each rope of seven strands, each strand of miniature wires 0.155 inch in diameter, No. 9. B.W.G. Each rope had a guaranteed tensile strength of 100 gross tons=112 tons net. They bore the test of 108 tons net without rupture of the rope, when the fastenings gave way.

The single track bridge was designed to carry with perfect safety a load of 100 tons without producing a strain of more than 25 per cent of the ultimate strength. Besides the cables there are over-flow stays which are a real support to the roadway; and in order to keep the roadway from swaying about in the wind, there were 54 guys, 28 of which were on the up stream, and 26 on the down stream side. Some months after the bridge was opened there was added both on the up stream and down stream side a horizontal arched cable, with horizontal stays between them and the roadway, which had a good effect in steadying the bridge.

The original bridge rested on wooden towers, but for fear of accidents by fire the Directors submitted steel towers for wood.

About two years ago the Directors decided to make the bridge a double track bridge without consulting me in the matter. They proceeded to take down my single track roadway, and to substitute a double track. This enlargement was completed in September last. I have not seen any of their work, and from lack of information I am unable to state what means were adopted by them to secure the double track against the additional strains that must come upon it. The additional strain on the cables and stays, and the additional surface offered to the force of the wind, for which more guys would have to be provided.

My bridge, before it was opened to the public, was officially inspected by officers of the Dominion, and of the state of New York; the Directors also employed the Hon. W. I McAlpine, their consulting engineer, to report more fully in regard to its sufficiency.

My bridge weathered the storms for twenty years. My cables and anchorages are still in place, and, I understand, are to be used in the reconstruction of the bridge. My roadway was not blown from the cables, it was taken down by the Bridge Company. It was the double track roadway substituted for the single track that was blown away only three months after it was put up; and I am not aware that there was any Government inspection of it.

It is a fortunate circumstance that no lives were lost in this accident. From all accounts it was a terrible storm. The anemometer at Buffalo registered the velocity of the wind 88 miles an hour.

The great problem to be solved in the construction of a bridge over this chasm is to keep it from being injuriously affected by wind storms which not only causes vibrations like that of a pendulum, but wave like undulation through the length of the roadway and the suspended portion of the cables. To guard against these a cradle form is given to the cable and the over-floor stays from the towers to the roadway, as well as the cradle stays from the cables to the base of the towers seem to check these undulations, while the under-floor guys reaching down at various angles from the roadways to the rocks along the river bank, meet and check the lateral force of the wind upon the whole suspended system.

To balance these forces one against the other, and leave a fair margin for safety, will tax the best skill of the engineer, because the storms through this gorge seem to drive with greatest fury in consequence of its funnel shape.

An opinion was expressed by the late J. A. Roebling, who built the railway suspension below this, that no bridge could be made to stand here at the falls; not on account of the storms, but from the spray coming from the American Fall, which would cover the bridge with ice and break it down. But the experience of twenty years has proved there is no danger to be apprehended from this cause. In deference however to his opinion the bridge was made a tentative structure, and if successful might afterwards be enlarged and made a permanent structure.

* Extract from the annual address of the President of the Canadian Society of Civil Engineers, held at Montreal, Jan. 17th, 1889.

HOW TO USE DYNAMITE IN WINTER.

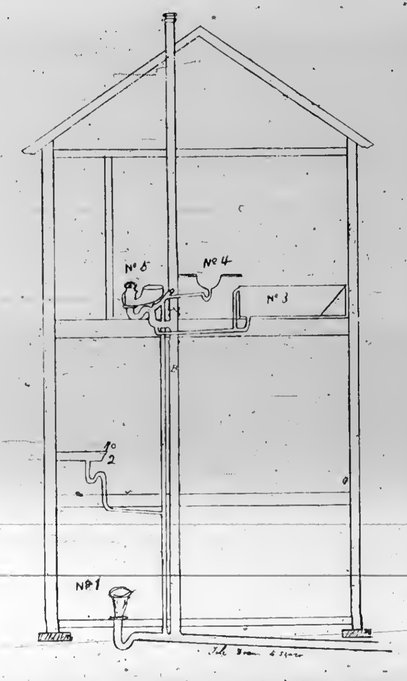
IN view of several fatal accidents which have occurred recently from dynamite explosions, Mr. John A. Macdonald, writes from Sault Ste. Marie to the Toronto *Empire* as follows:

"In order to prevent such accidents in future I offer a few suggestions for the benefit of those who may be engaged in the use of dynamite in cold or frosty weather. Your correspondent has used all kinds of explosives on the C. P. R. on the north shore of Lake Superior, from the 30 per cent. up to 60, and the glycerine in its pure state. In winter make a good strong fire, and aroundd this fire put three or four bushels of common plasterers' sand; as it dries push it into the fire and make it hot enough to run. Now pull the sand out of the fire and apply cold water to the sand, so that it will be all damp. This can be accomplished with a hoe. Mix well, the heat will be very great, and no fire. Put this in a shallow box, say two feet wide by three feet long and about eight inches deep; spread four inches on the bottom, then place the dynamite on this, then cover up with this warm sand, throw a blanket over the box and everything is safe. This can be done at night, and with protection from the wind and a larger quantity of sand all the powder for the following day can be thus prepared without fear. I have used dynamite by the tons in every form, and for all kinds of work, but of all the plans for thawing dynamite the above is the safest. Dynamite is as harmless up to 50 per cent. as candles if handled properly. Dynamite is more dangerous in winter than in summer. Dynamite that is not properly thawed is dangerous, because in a low temperature it will sometimes burn and not explode; but frozen dynamite may burn down to dynamite that is properly thawed and cause this to explode.

SANITATION IN THE HOME

SPECIMEN NO. 2 OF "SANITARY PLUMBING."

IN our issue of last month we gave a brief description of a case of scamp plumbing that was aired in the Toronto courts. In the present issue we give another and a similar piece of work, executed by the same individual, and over which there has been another law suit. The circumstances of the case are briefly as follows : A was building a pair of houses and invited B to tender on the work. B sent in his tender and a specification of what he proposed to do. The builder considered the price ridiculously low compared with what he had been accustomed to pay for similar work, and sent word to B to this effect, at the same time stating that he wanted a good sanitary piece of work, and asked B to reconsider his tender, and put in a price to cover the requirements of the city ordinance. B sent in another tender, this time asking fifty dollars in excess of his first offer and was awarded the contract. All went on merrily until about



NOTE.—B, 4 in. cast iron pipe ; A, 4 in. lead pipe, with slip joint made with putty ; No. 1, hopper closet ; 2, kitchen sink ; 3, bath tub ; 4, wash basin ; 5, Demarest water closet. About one-half of the joints in-lead and iron waste pipes were made with putty, and one joint on the 2 in. lead vent pipe was made with *pitch*.

half the work had been done, when one day the plumbing inspector happened along and insisted that material of proper weight should be put in to conform with the plumbing by-law, which B consented to do. Nothing further was heard of the matter until A received his bill, when to his surprise B had, in addition to his contract price, charged him $42 for extra material in having to comply with the city by-law. A naturally refused to pay this extra charge, as he claims he instructed B to do this in his second tender. B then entered suit to recover his claim when A sent the plumbing inspector up to examine the job, and discovered the work exactly as shown in our engraving, which will at a glance explain itself. The judge on hearing the evidence decided the plumber was at fault, appointed another master plumber to examine the job and report to him the probable cost of putting the work in good sanitary condition, gave judgment that the plumber should pay this bill, and disallowed his claim for extras with costs. This is not the first time this very enterprising person who poses as a plumber has received his reward for scamp work.

TRAPS AND THEIR VENTILATION.

By B. KIRK.

THE main trap on house drains has been the subject of much attack from various quarters. It has been charged with having generated nearly all the foul gases which emanate from the sewers, and acting on the assumption that the charge has been proven, some are prepared to abolish it. This would be equivalent to a jump out of the frying pan into the fire. A drain trap is like any other trap used in plumbing practice ; it should be so constructed as to be self-cleaning, and if it is not so constructed, it will be a nuisance. A drain, together with its trap should be of such a size as is calculated to meet all that will be required of it and not more than that. A six-inch drain is too large for an ordinary house, for the reason that sufficient water cannot be collected into it at one time from such a house to flush it. Therefore if the drain cannot be flushed, its trap cannot be flushed. I have seen a small house drained through a nine-inch trap which could never be anything but a cesspool of reeking filth.

Much ignorance is frequently displayed in the setting of drain traps. Nearly all the drain layers I have met with, level the trap from the cleaning hand-hole—placing a straight-edge over it—and if on placing a level on it, the drop shows in the centre, it is pronounced to be correct. Now, a look at some of the traps will demonstrate the absurdity of this. The hand-hole is seldom at right angles with the trap, so that when a trap is so set, the outgo will be found to be higher than the inlet (in some cases as much as three inches), and as a result, the water will remain in the drain on the inlet side for two or three lengths, varying with the amount of fall which is given to it. A trap set in such a way could not be otherwise than foul. It is folly to reason that because such bad results emanate from improperly constructed traps, they should therefore be abolished. It might as well be reasoned that because improperly constructed water closets give poor satisfaction, therefore water closets should be abolished. Let us have traps properly constructed and then we will have good results.

I prefer the ½S trap or P trap to the running trap, where sufficient fall can be obtained ; the water having a fall of from six to twelve inches into the trap will more thoroughly flush it. In setting a running trap, the water seal should be about half an inch lower than the inlet. This will favor its chances of being flushed.

Another fruitful source of filth accumulation, is the manner in which the piping is often put together. A bedding of cement is placed in the bottom of the last pipe laid ; then the next pipe is placed into it and forced up to the shoulder at the hub, carrying with it some of the cement, which is squeezed up into the pipe. S. S. Hellyer, in his book "The Plumber and Sanitary Houses," speaking of untrapped drains, says : "It is, to say the least, a little communicative." It is bad enough to contend with the foul air contained in one's own drain, without contending with the accumulations of a whole community.

These are some of the risks attending the omission of the main trap. Some handy man who professes to understand all about drains, is engaged to make a connection with the drain for an additional rain water pipe, or for the purpose of draining a wet cellar. If a trap is furnished he will probably put it in, but it is a chance. A wall, under which the drain passes, settles down upon it, crushing or breaking the tiles ; one of a block of houses remains idle—the traps being unused, dry out, the house being closed up and communication with the houses on either sides not being entirely cut off, sewer gas will find its way into each of them ; the extension of soil pipes in close proximity to the windows of an adjoining house ; the liability of such extensions to become closed up by hoar frost during the winter months, in which case a pressure in the sewer would be liable to force the traps.

There are some instances in which it would be safe to omit the drain trap, but they are special. In some of our high buildings where the entire drainage system from the outside of cellar walls to the roof is constructed of heavy cast iron, said trap might be safely omitted, but only where such conditions exist should this be done.

In the case of an empty house, as above mentioned, the trap is the only safe-guard. Its seal would be maintained by every rainfall, the fresh air from the inlet pipe would keep the drain sweet, and evil resulting from dried-out traps would thus be minimized.

As I said before, all traps should be self-cleansing, and to my mind it is clear that the drawn lead trap fulfills all the requirements of a self-cleaning trap, and while it is necessary to have sufficient depth of seal, (one and a quarter inches is little enough), it should not be more than two inches in depth for more than that will constitute a filthy cesspool.

Every trap should be ventilated mainly to prevent siphonage, but also to prevent air pressure, and the formation of gases which have a tendency to form in unventilated waste pipes, and which may be absorbed by the water in the traps and given off again into the house. These trap-vent pipes should rise separately from their connection with the traps and connect into the soil pipe above the highest fixture, or they may be combined by connecting into one main pipe, but such junction should be at least six inches above the highest of the adjoining fixtures, otherwise, in the event of a stoppage in the waste pipe, the waste water would rise until it reached the vent pipe through which it would continue to flow until it in turn became stopped up, thus rendering it useless.

Close to the connection with the trap, a cleaning screw should be placed on the vent pipe for convenience of inspection or the cleaning of the trap or vent pipe at its connection with the same. Local ventilation might also be furnished to each trap. This should be connected to the inlet side of trap as remote as possible from the water seal (to prevent evaporation) and carried to a heated flue. Each trap thus becomes an outlet for vitiated air as well as for waste water.

I have recently made some experiments on the durability of the seal of a one and a quarter inch trap ventilated on each side of the water seal as above described. The depth of seal was one inch and nine-sixteenths. It took just six days to destroy the seal, and after the seal had been broken, the blaze of a match was still attracted down into the trap when placed near the mouth of it. I then cut off the local vent, leaving only the back-vent or break-siphon ; and although the trap has been placed in a warm kitchen it has taken just twenty-four days to reduce the seal one inch and a sixteenth ; after the seal has been entirely destroyed, I intend testing the durability of it without any vent attachments.

It would thus appear, that the objections raised against vented traps on the score of evaporation are not tangible.

INSUFFICIENT ACCOMMODATION FOR STEAM PLANTS.

THE *American Engineer* says :—"The past few years has seen a change in the building question as in many other problems of the time, and as a result it is a rare exception to find, in any of our larger cities, any large building erected, that is to be used either for mercantile, hotel or office purposes that is not heated by steam, hence have steam plants as a part of the building. In fact it may be said that steam power forms a feature of all of our large buildings.

However apparent the fact is, that a steam plant is to be located in the great buildings of this age, the architects in Chicago at least, seem to design the building with a view to every other connection, and then after that is done, the steam plant is suddenly thought of, and as they have made no provisions for it, they stick it away down in some corner, often times under the pavement, with hardly room enough to get it in, let alone room to work around it.

To any one concerned in the matter it can not but prove an interesting trip to go about among the gigantic office buildings of Chicago, and note the cramped up arrangements of the machinery department, and to see in what a circumscribed space the engineer must perform the duties assigned to him."

DECORATION AND FURNITURE

PLASTERING AND STUCCO WORK.*

By JAMES JOHN.

IT has not been the fate of this simple, durable and inexpensive material to escape the assaults which every good thing in this world must encounter at one time or another. It has been called unclean ; but it is not so of itself. Like many another wholesome and useful medium, it can be so illy made and be so indifferently applied, as to offer to dirt and insects abiding places due to the perverted ingenuity of man, not to the inherent defects of itself. In spite of all that has been said against it, it remains the universal lining for dwellings throughout the civilized world. Wealth may incase walls and ceilings in decorative woods and metals, but for the mass of mankind, plaster must continue to be the simplest, cleanest, least costly and most enduring finish for homes. The health of the vast majority of mankind is, therefore, largely dependent upon the materials used in its mixture, and the principles which shall actuate its employment.

It is undeniable that the custom that obtained some years ago of applying plaster in highly ornate designs, was for domestic purposes unsanitary. The foliated, convulted and otherwise multiform designs which used to be spread out upon ceilings, in cornices or special pieces, are gradually passing out of use. Their innumerable crevices served only as receptacles of dirt, in which the deposits were continuous.

The ornamental uses of plaster having been reduced by good sense and good taste, it remains still the most vigorous, as it is the oldest vehicle for carrying down to generation after generation the masterpieces of art with which the golden age of sculpture enriched the human race. Humble as its components are, common and cheap as it seems beside marble, and paltry when compared with the metals that have, to a considerable degree, taken its place for reproductive uses, it still preserves the plastic art, and enables youth to contemplate antiquity in its noblest achievements. To-day plaster is revolutionizing industrial art ; for us, and, in all probability, for those who are to come after us, plaster, lowly and cheap, but docile and durable, is the connecting agent with this greatest of men's indorsements in the past.

Plaster thus employed in duplicating works of marble, iron and bronze, is to-day extending the finest industries, modern and ancient. The erection of the new museums in England, near the great manufacturing centers, would be next to useless were not plaster available for distributing fac-similes of the works, whose grandeur has made the name of Greece imperishable, and whose usefulness in development and the study of form, for all arts, is acknowledged to be unequalled. So potent is this simple medium, therefore, that it serves to-day as effectually as marble itself for the perpetuation of fine art ; and by its endless variations of models, copied from every other material known in history, it is the supreme teacher of design. The reproduction of classic works at Kensington, and their dissemination throughout the provinces of the United Kingdom, has had the effect of making France fear for her supremacy in fine industrial productions. The important part that plaster thus plays in the Old World, it will continue to play in the new. Wherever art places its altar, plaster will be there as its handmaid ; and though it may be abused by carelessness and calumniated by more pretentious rivals, it must remain the most faithful friend of progress in taste, in science and in decoration.

Noble and varied as may be the uses to which plaster has and may be applied, I regret to say that the art of applying same, as a vocation, for the lining of dwellings is to-day so unremunerative to the artisan, that it *almost* ceases to enlist the skill and intelligence that the art should command. This is due mainly to the want of appreciation by the architect and owner, whose only thoughts are for a semblance, for the time being, and are tempted by the questionable economy of saving a few dollars,

*Paper read before the third annual convention of the National Association of Builders, at Philadelphia, February 13th, 1889.

into letting contracts to men of no mechanical standing. It is hoped and expected that through the influence of the National Association of Builders, and the intercourse its executive officers may have with the reputable architects of the country, that the day is not far distant when it will be required of the artisan in the various branches pertaining to buildings, to arm himself with a proper and authoritative testimonial, giving proof that he is *skilled* in his art, and thus divest the wheat from the chaff, and the former be recognized and the latter find its level.

It is a well-known fact that plaster on a ceiling surface, in the event of fire, will detain it for a long time, providing any means have been taken when applied to secure it under such circumstances, and were these means more generally employed, millions of dollars would be saved to this country annually.

As the fire-proof construction is the exception, and as wood construction must predominate for years to come, therefore, more attention should be given to make the latter structure more fire-resisting.

During the last twenty years I have devoted much thought to this subject, and some of the devices I have had in that direction, I have sought to secure by letters patent, and, strange to say, came in conflict with an English patent in the archives at Washington, bearing date 1797. The device then discovered has been slumbering there nearly one hundred years, and *to-day*, I know of nothing *more economical or effectual* to secure plaster in position in the event of fire than this same device. It is simply a wire netting, as used to-day for a foundation, but as these described placed over the bottom surface of the plaster, and then securely stapled to the furring or joints, and afterward the finishing coat of plaster applied over the surface. And as most every mechanic has at some time or other taken out a patent, or applied for one, it may be interesting to you to hear the language that Edmund Cartwright (as that was the name of the applicant) used in paying due deference to his sovereign lord.

After describing his invention in substantially the same language that obtains in patents of the present day, he closes thus:

"In witness whereof, I, the said Edmund Cartwright, have hereunto set my hand and seal this eighth day of November, in the thirty-eighth year of the reign of our Sovereign Lord, George the Third, by the grace of God, of Great Britain, France and Ireland King, Defender of the Faith, and so forth, and in the year of our Lord one thousand seven hundred and ninety-seven.

EDMUND CARTWRIGHT."

Some of the designs in art tiles are formed by pressing on the surface actual stalks, leaves and flowers, reliefs being taken from the impressions, either the intaglio or embossed design supplying a pattern for dies. Intaglio tiles, may have the incised lines filled with enameled colors corresponding in hue, if desired, to the objects impressed.

It is suggested that a profitable opening exists for the manufacture of plaster of Paris from plaster of gypsum, which is produced and exported in large quantities from Nova Scotia.

Messrs Geo. Moore & Co., of Waterloo, Ont., have bought the well-known brick-yards of Mr. Oetzel at Berlin and Waterloo, and fitted them up with the latest and most approved machinery.

The Winnipeg *Sun* says that Mr. J. R. Tracey of that city, who is the inventor of a heating apparatus as an attachment to cook stoves, will come east shortly and endeavor to commence the manufacture of his invention at some point in Ontario.

At the annual meeting of the Owen Sound Stone Quarrying and Construction Co., held recently, the following officers were elected: President, S. G. Parker; Vice-President, George Inglis; Secretary-Treasurer, W. B. Stephens; Manager, David Chalmers.

A deputation of soil pipe makers from Montreal, Toronto and Hamilton, interviewed the Ministers of Finance and Customs recently, and asked for an increase of duties on pipes of less than 4 inches diameter. They want a specific instead of an *ad valorem* duty.

Electricity is being more and more used for the purification of kaolin and other porcelain clays. The clay is sifted on to a rapidly revolving horizontal plate, which is surrounded with powerful electro-magnets, which retain the particles of iron. From this the clay passes to a second plate which removes the last traces. The process is said to be comparatively cheap and very rapid, and since its introduction, many clays hitherto rejected as containing too much iron have become of value for the manufacture of pottery.

CONTRACTS

CONTRACTS AWARDED.

The contract for the new Congregational Church at Waterford, Ont., has been awarded to H. J. Fowler. Cost, $2,000.

The contract for erecting a new high school at Parkhill, Ont., has been awarded to Mr. A. K. Vanwyck, of that town.

Mr. Geo. Newlands has been awarded the contract for the new tower for St. Mary's Cathedral, Kingston, Ont., at the price of $63,302.

Messrs. Kennedy & Co., Guelph, Ont. have received the contract to supply the stone for the new Government building at Goderich.

CONTRACTS OPEN.

ST. THOMAS ONT.—A hospital will be erected here this spring.

PRESTON, ONT.—A new school building is to be erected here.

BEETON, ONT.—W. J. Bell will build a large public hall in Beeton.

ELMVALE, ONT.—A hotel to cost $5,000 will be built here this spring.

STAYNER, ONT.—The Roman Catholics will put up a new parsonage.

SIMCOE, ONT.—Money has been voted for the erection of a new fire hall.

PERTH, ONT.—A site has been selected for the new St. Andrew's church.

BRANDON, MAN.—A new post office will be erected this coming summer.

DUTTON, ONT.—Two large brick hotels will probably be built here next summer.

ELMVALE, ONT.—The trustees have resolved to enlarge the public school building.

DESERONTO, ONT.—The council has voted $12,000 for the erection of a high school.

CLINTON, ONT.—$3 000 has been subscribed towards the erection of a new Methodist Church.

VICTORIA, B. C.—Mr. Macauley contemplates the erection of a $25,000 residence here next summer.

HARRISTON, ONT.—Tenders are called for a new town hall, to replace the one lately destroyed by fire.

AMHERSTBURG, ONT.—A new Roman Catholic parsonage to cost about $5,000 is to be erected this spring.

BROCKVILLE, ONT.—An hotel to cost $75,000 will be built at Grennell park, Thousand Islands, next summer.

GUELPH, ONT.—Steps are being taken to erect a new curling rink, the probable cost of which will be $10,000.

MONTREAL, QUE.—It is the intention of the Bank of Montreal to erect a building for a branch establishment in this city.

CHATHAM, ONT.—Preparations are under way for the erection of a hospital for this town. Dr. Carron can give particulars.

INGERSOLL, ONT.—A piano manufacturing company intend erecting a four-storey brick factory, at a probable cost of $5 000.

KINGSTON, ONT.—A company of capitalists has purchased Grovedale Park Tabernacle and grounds and will erect a $50,000 building.

KINGSTON, ONT.—Mr. H. Calvin has offered a donation of $1,000 towards a new wing for the hospital on condition that $9,000 additional is raised.

KINGSTON, ONT.—Tenders are asked until the 28th inst., for the construction of a dry dock. For particulars see advertisement "Notice to Contractors" in this paper.

ST. JOHN, N. B.—The commissioners of the general public hospital are to ask the New Brunswick legislature for permission to borrow $10,000 to erect an additional wing to the institution.

MIDLAND, ONT.—A by-law has been passed granting $5,000 towards the completion of the harbor improvements in conjunction with the Dominion Government and Grand Trunk Railway.

DARTMOUTH, N. S.—Tenders are asked until 3rd April for sewer pipe, sluice valves, cast iron pipe and special castings required for use in the construction of a proposed system of sewerage and water supply for this town. Particulars may be obtained on application to A. Elliott, town clerk.

WINNIPEG, MAN.—The President of the Northern Pacific Railroad says it is the intention of his company to expend about $2 00,000 in new buildings in this city the coming summer.—The Provincial Treasurer's estimates include $20,000 for the erection of buildings for land titles offices, $20,000 for the erection of a deaf and dumb institute, $50,000 for the erection of a reformatory and home for incurables.

HAMILTON, ONT.—Mr. R. McKechnie, of Dundas, has purchased a site in this city on which he will erect large machine shops in the spring.—A handsome new building for the Y. M. C. A. will be commenced shortly. Mr. James Balfour, architect, has prepared the plans. The building will

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—THE—

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ADVERTISEMENTS.

Prices for advertising sent promptly on application. Orders for advertising should reach the office of publication not later than the 15th day of the month, and changes of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The Ontario Association of Architects has appointed the "Canadian Architect and Builder" its official paper.

ANOTHER Montreal building collapsed a few days ago, with it is feared fatal results to two persons employed therein. As in the case of the building referred to last month, the walls appear to have been weak, and bulged out beneath the weight of the roof. What is the matter with the Montreal inspection service?

A DECISION in the matter of the erection of the new Toronto City Hall and Court House in accordance with the design recently published in this journal, may now be looked for. In order to carry out the present design, $600,000 in addition to the amount already voted for the purpose is required. The Council has decided to submit a by-law to the citizens for this amount on May 18th.

THE introduction of steam boilers for heating purposes into large buildings has brought with it serious danger to life and property. These steam-heating plants are in very many instances placed in charge of persons whose knowledge of the principles of steam engineering and steam engine management is of the most scanty description. The fact that the services of such persons can be secured at a very much lower figure than would have to be paid to properly qualified engineers, is often sufficient to induce owners and lessees of buildings to assume the terrible risks attendant upon their incompetence. In the city of Hartford, Conn., a few nights ago, a hotel was blown to atoms and the lives of many persons destroyed owing to the fact that the so-called "engineer" had tied down the safety-valve on his boiler so that the noise of escaping steam would not prove a cause of annoyance to the occupants of the building. The time has come when persons placed in charge of steam boilers should be compelled to prove their qualifications for the duties of so responsible a position.

IT is somewhat of a reflection upon those who have in hand the movement in Toronto to secure legislation compelling telegraph, telephone and electric wires to be placed underground, that they did not acquaint themselves with the source from which the necessary legislation for that purpose must be obtained. After allowing the session of the Ontario Legislature to go by, they are told by the Dominion Government that the legislation must come from the Legislature. Owing to the lack of foresight displayed by those connected with the movement, nothing can now be done for another year. Meanwhile, the wires will continue to prove an eye-sore and a source of danger to the public.

ALREADY in several cities of the United States strikes in the building trades are in progress. In Canada, as yet, there are no indications of trouble. Enquiry amongst Toronto architects and builders leads us to the conclusion that this season at least is likely to pass unmarred by the almost yearly recurring disputes between employees and employers. In view of the fact that shortage of crops and other causes have had a depressing effect upon the country's prosperity for two or three years past, it is the part of wisdom for workmen to refrain from making demands which could not be complied with, and if persisted in, would tend to retard the hoped-for improvement in the business situation. With the early disappearance of snow and frost, enabling builders to commence operations fully a month earlier than usual, and the prospect that the number and value of new buildings will be fully up to the average of the last few years, we may look forward to a season of prosperity in the building trades.

WHEN comment was recently made upon the fact that Mr. R. A. Waite, of Buffalo, the favorite architect of the Ontario Government, was beaten by at least two Canadian firms in the competition for the new Toronto Board of Trade Building, the Toronto *Globe* rushed to the defence and declared that Mr. R. A. Waite was not a competitor for the Board of Trade Building. As the names of the competing architects were not obtainable at the time the *Globe's* statement appeared, a positive disproval could not be given to it. Knowing however, that Mr. R. A. Waite had been invited by the committee to enter the Board of Trade competition, we requested Prof. Ware, who was appointed to judge the plans, to furnish us with a list of the competitors. This he has been kind enough to do. The names are published on another page of this paper, and a perusal of them will show that Mr. Waite *did* compete, with what result is already known. We have taken the trouble thus to disprove the *Globe's* statement in order to show that Canadian architects have in the interests of a foreigner been deprived of work which they were justly entitled to both on account of their superior ability and their residence in Canada.

THE manager of a New York Company with whom we had a conversation recently, complained of the difficulty experienced in inducing architects to enquire into and test the merits of any new article introduced for use in the construction of buildings. He took the view that it was not the least important duty which the architect owed to his client to acquaint himself with the nature and value of every new article placed upon the market. Instead of this, there appeared to be an unwillingness on the part of the majority of architects to take the trouble to learn for themselves the merits of an article which might for the first time be brought to their notice. We could not help thinking that the gentleman's contention was a just one, and we trust that whatever may be the practice of American architects, the members of the profession in Canada will not be slow to show their appreciation or otherwise, based upon their personal knowledge, of new materials of construction which may from time to time be introduced. The architect who desires to assist the march of architectural improvement, should seek to encourage those engaged in the production of appliances designed to add to the beauty, safety and convenience of the buildings of the future.

THE architects of Ontario are to be congratulated upon the successful formation of an Architectural Association for this Province. The meeting held in this city with that object on March 21st, both as regards its representative character, the large number in attendance, and the enthusiasm and unanimity which marked the proceedings, was a pleasant surprise to many. It revealed a feeling of deep interest, which augurs well for the future of the newly-formed Association and the architecture of this country. To the Architectural Guild of Toronto is due the credit of bringing about the meeting with its attendant results. We believe a wise choice has been made in the officers selected to manage the affairs of the Association. They will doubtless bring to the discharge of their duties the energy and wisdom which will serve to stimulate and maintain the interest of all the members in the work of the Association. We desire to acknowledge the kindness which prompted the Association to make the CANADIAN ARCHITECT AND BUILDER its official paper. It will give us pleasure to advance in any way possible the worthy objects which the Association has in view. One of the first things we feel called upon to do is to urge every architect who was not present at the recent meeting to send in at once his application for membership in the Association, and join heartily in the movement to place the profession of architecture in Ontario on a more satisfactory basis than it has hitherto occupied.

WE publish this month several more letters from contractors on the subject of the formation of a Builders' and Contractors' Association for the Province of Ontario. All express a desire to see such an Association formed. Doubts have been expressed by more than one of our correspondents as to whether the members of an Association could be got to live up to the standard agreed upon. In the opinion of others sufficient interest would not be taken in the objects of the Association to induce attendance at the meetings. We should be sorry to believe that these fears are well founded. Are not our builders and contractors as much alive to their interests as those of the United States, where delegates to the meetings of the National Association of Builders come from every State in the Union? There are in every walk of life men too apathetic to take part in a movement of this kind and too short-sighted to see that time and money spent in considering and putting in operation means for the improvement of the business in which they are engaged, is not lost, but is certain sooner or later to bring its individual reward. In London, Ont., the feeling in favor of Association is so strong that unless an Ontario Association be formed, affiliation may be sought with the National Association of the United States. While we have the greatest admiration for our American neighbors, we should be sorry to see our master builders entering the Association of the United States instead of organizing themselves into a Canadian Association. Many of the most important objects to be accomplished can only be attained by a Canadian Association. The favor with which the proposition to form a Provincial Association has been received, would seem to leave little room to doubt that a representative meeting of builders and contractors throughout the Province could be got together at some central point for organization. Perhaps, as suggested by one of our correspondents, no more suitable or convenient place could be selected than Toronto. Builders and contractors of other cities appear to be waiting to hear the views of some of our Toronto builders on this subject. In our next issue we hope to be able to present these, after which we trust some definite steps may be taken toward organization.

WE regret that the "Canada First" sentiment which strongly characterized the proceedings at the banquet of the Toronto Board of Trade a few months ago, appears to have been lost sight of entirely when the question of who should be entrusted with the erection of the new Board of Trade building recently came up for decision. The report of the expert who judged the plans, speaks as follows concerning the work of two of the Canadian competitors:

> "But the design bearing the title "Utility," (one of two thus designated), shows an external treatment so effective and original that it deserves to be urged upon the Committee's attention. It is seldom in my opinion that one comes across a design so noticeably out of the common course, which is at the same time so simple, rational and dignified. It was, moreover, to my mind, just the character suited to a business building, which is at the same time the seat of a public institution."

> "The design marked "Ten Per Cent" has to my mind *no advantages* of plan over that just spoken of. . . . These plans, though not as good as the others, *are good enough*. . . . If they (the Committee), agree with me in regard to the great merits of the design marked "Utility," in its external treatment, then *I recommend that they take such measures as may prove practicable to combine this elevation with the other plans. Fortunately there is nothing in this elevation to prevent its fitting the plans of the design marked "Ten Per Cent."*

The design marked "Utility" was submitted by Messrs. Darling & Curry, and the one marked "Ten Per Cent," by Messrs. Gordon & Helliwell, both Toronto firms. Messrs. Darling & Curry's elevations are declared to be in the best of taste and exactly suited to the requirements. Messrs. Gordon & Helliwell's plans are said to be "good enough," and easily adapted to the elevations of the other Canadian firm. Under these circumstances we are led to wonder why the Building Committee did not manifest their patriotism by adopting the expert's suggestion to combine the elevations of the one Canadian firm with the plans of the other. Instead of so doing, however, they gave the entire work to a foreign architect, *with the added privilege of amending both his elevations and plans.* It is impossible to conceive of a committee of American business men under similar circumstances discriminating thus against their own countrymen. Not only has an injustice been done to our native architects, but also to our manufacturers and dealers in building materials, as the foreign architect naturally uses his influence to secure the use of foreign materials. Thus money earned in Canada is sent abroad to enrich the manufacturers of a foreign country, instead of being made a means of assisting those who are endeavoring to build up industrial enterprise in Canada. In the face of such conduct, protestations of loyalty to things Canadian amount to nothing.

A SPECIAL committee of the City Council has been appointed to consider the advisability of establishing classes for the purpose of imparting practical scientific instruction to the industrial classes of the city. Our opinion is that such instruction should not be provided by the City Council, but by the Provincial Government; the Council might, possibly should, give assistance in the form of a grant of money to the schools. That technical schools would be managed successfully or economically by the City Council we very much doubt. It might be done if the Council would be content to provide such funds as in its opinion the city could afford, and then place the management of the school in a board of five or seven capable men appointed because of their knowledge of technical matters. A technical school could be made of very great service and value to all industrial classes. But there is much to fear from men who have hobbies which they wish adopted. One man believes that some one particular subject should be taught, and that in a special manner. Another believes that something else should be taught, or that the last man is infringing on the rights of some

union or other interest. That there is much need of some efficient training of our mechanics in technical matters, all will admit who have had any experience of the mistakes which the average mechanic is capable of making to the injury of himself as a mechanic, and the serious loss of his employer. It is possible that the education which they most require is one which would prepare them to receive technical education. Many of our mechanics have an aversion to theoretical knowledge, even priding themselves on their total ignorance of any thing which is not in their opinion practical. If these detestors of theory were good practical men, one could excuse them, but, as might be expected, they are almost invariably poor workmen. The contempt which such men have for theory is only equalled by that which intelligent men have for them. The first thing therefore is, to teach a man that there is no such thing as being possessed of too much information, either practical or theoretical—that the man who can make himself of the greatest service will succeed better than the man of lesser qualifications. It is not enough that a man can do certain work and receive the ordinary remuneration for the same; he should, if he has the ability, gain a knowledge of all matters directly or indirectly bearing upon his pursuit. That some employers are too ignorant to recognize intelligence and ability, and refuse to pay anything additional, does not prove that all are likewise indifferent. The time will come when some employers will see what is in the man and appreciate him accordingly. The unions have been doing their best to make all men, intelligent and ignorant, stand on the same plane, but it cannot be done for long. The capable man will rise in spite of all the weights which he may be forced to carry.

A man who has a reasonable knowledge of the theory of his trade, must become a better practical man, for he will have more information, and will have greater resources. No one will surely maintain that a man's ability to use his hands skilfully is lessened by having his brain power cultured, and yet one is almost obliged to come to that conclusion by the statements made by some very ignorant friends of labor. We are at times inclined to blame the teaching given in our public schools for much of the contempt which Canadian workmen have for technical knowledge, or in fact for information of any kind. If a reasonable amount of time was taken by the teachers to impress upon their scholars the value of knowledge instead of trying to drive it into them according to lines laid down, and made mechanical by regulation upon regulation, our workmen would surely show a greater desire to become acquainted with that theoretical information which they now hold of little value. The bricklayer or mason would not be a poorer mechanic because he has some knowledge of the loads which the material he handles will carry with safety; nor the carpenter if he has some knowledge of the safe loads which beams, joists, columns, etc., will carry. Every workman in the building trades would be benefitted by a training in the theoretical branches of his trade; and what is true of them must be true of every mechanic in the country.

IF building operations in the province are as brisk as the demand for competitions for design, there is a very large amount of work being done and to be done this summer. We have severely criticized the conditions of a number of competitions, and still we hear of others being brought forward with conditions as bad or worse than those criticized. The County Council of Kent ask for competitive designs for a Court House to be erected in Chatham. The building is not to cost more than $30,000, which is an allowance equal to about 5 cents per cubic foot. When there is so little money to be expended, and so much required, it would be much better to save the expense of holding a competition, and go at once to the nearest architect who has a reputation for doing cheap and bad work. No competent or reliable man will be drawn into a competition of this character when the inducement is $900 for $1500 worth of work, more especially as there is but very little hope of merit alone winning the magnificent prize. The amount of room asked for on the first floor is 3,321 sq. feet, on the second floor, 3,761 sq. feet, and on the third floor, 6,256 sq. feet. As the lower floors must equal in area those above, we will be obliged to figure the approximate size of the building by top floor. For walls, halls, staircases, lavatories, etc., it will require nearly an equal amount of area, say 5,500 sq. feet, thus making the total area of the building 12,000 sq. feet. The height for cubing the same will not be less than 50 feet, thus giving a total cubic space of 600,000 feet, which, divided by the sum of $30,000, gives the truly magnificent amount of 5 cents per cubic foot for the erection of the building. We do not know what such a building should cost, but we are of the opinion that it cannot be erected, even in the plainest manner, for less than 10 cents per foot, or a total amount of $60,000. If the building can be erected for the above amount in even an imperfect manner, the County Council of Kent need not fear that they will be accused of extravagance. The building will cover an area equal to 240 feet long by 50 feet in width, with a height of not less than 50 feet. That such a building can be had for $30,000, no one with a single grain of sense will maintain, and consequently those men who profess to be architects who enter the competition, will deserve any treatment which they may receive at the hands of a Committee so ignorant of the cost of building as this Committee appears to be. The usual commission of 5 per cent. is no more than a fair and reasonable remuneration for the work which an architect will be required to give if he properly fulfils his duties. At 3 per cent. he will not receive back what the work will cost him to execute, if he does not shirk the work which devolves upon him as an architect. Of course, some architects have a method of reinforcing a low commission by allowing the contractors to understand that they can make up the deficiency to their advantage. This method allows of the architect making good the deficiency in his commission, at whose expense we will allow his client to figure out. We will say, however, that the contractors are none the poorer through such payments. All architects who accept commissions below a fair rate are not dishonest, but there are far too many men who claim to be architects who are not honest, and who make much more out of their work, although it may be done at 01 %, than those men who charge the highest rates. The condition that all the premiated drawings are to become the property of the Committee, is highly objectionable, and would alone prevent architects of any position entering the competition, even though all the other conditions met their views. The ordinary building committee is apparently not able to distinguish between a set of drawings necessary to explain a competitive design, that it may be awarded its proper position, and a full set of working drawings giving every possible information which a contractor may require to enable him to take off his quantities and give them proper values. A set of competitive drawings cannot be prepared which will meet with the entire approval of a committee, and where they have to be altered to any extent, it is better to prepare new drawings. The calling for all manner of unnecessary drawings and full specifications is unreasonable, more especially as not one in ten of the members on the building committees ever understand them. They certainly have no knowledge of the amount of work which the preparation of them entails. Architects should also refuse to send in designs to be judged by incompetent committees. Professional advice should always be insisted upon, as there is thus some guarantee that one of the best plans will be accepted, and not one of the worst. It is astonishing how men of little culture and no artistic training, consider themselves competent to judge of designs for a building, when at the same time they would scorn to have any work which they might do in their particular calling judged by any one not of that calling. We have also seen a notice of a competition to be held for a town hall in Collingwood. The notice is very brief and very indefinite, the committee evidently not knowing anything about a competition. No sum is mentioned for the erection of the proposed building. In this they are wiser than the building committee of the County Council of Kent. What we have said above applies more or less to this most vague competition for a town hall in Collingwood.

ONTARIO ASSOCIATION OF ARCHITECTS.

A MEETING of the representative architects of Ontario, was held on Thursday afternoon, March 21st, at the Queen's Hotel. The following architects were present and signed the following agreement:

"We, the undersigned architects practising in the Province of Ontario, do hereby agree to become members of the 'Ontario Association of Architects.'"

T. J. Rutley, Jas. L. Wilson, Chatham; W. L. Symons, Grant Helliwell, Chas. F. Wagner, E. J. Lennox, John Gemmell, Wm. R. Gregg, R. W. Gambier-Bousfield, Mark Hall, G. W. King, Geo. W. Gouinlock, A. Frank Wickson, Frederick Charles Law, William Storm, Frank Darling, W. R. Strickland, Geo. M. Miller, R. M. Charlton, A. E. Paull, Geo. R. Harper, E. A. Whitehead, W. J. Smith, Wm. Raeside, Marcel Willmot, W. J. Stibbs, Chas. A. Walton, J. W. Mallory, Henry Langley, Edmund Burke, S. H. Townsend, A. E. Boultbee, Herbert G. Paull, W. A. Langton, J. Ades Fowler, S. G. Curry, Robert Ogilvie, H. J. Webster, Norman Dick, H. B. Gordon, R. C. Windeyer, M. B. Aylsworth, J. Connolly, D. B. Dick, and Arthur R. Denison, Toronto; F. J. Rastrick, Wm. Arthur Edwards, Chas. W. Mulligan, and James B. Balfour, Hamilton; John W. H. Watts, D. Ewart, K. Arnoldi, and Fred J. Alexander, Ottawa; John E. Belcher, Peterboro'; A. A. Post, Whitby; Henry G. Duck, Ridgetown; Thos. J. Kennedy, Barrie; S. G. Dolson, St. Catharines; Cornelius J. Soule, Guelph; Wm. Bunney, Bowmanville; Geo. F. Durand, and H. C. McBride, London; Jos. W. Power, Kingston.

It was moved and seconded that Mr. Geo. F. Durand take the chair.—Carried.

On taking his seat as presiding officer of the meeting, Mr. Durand said: It is quite unnecessary for me to make any remarks in opening this meeting, as you are all well aware what it was called for. I am pleased to see such a large and representative gathering, which is particularly satisfactory as showing that each and all have at heart, the interests of the profession throughout the Province. The first thing I think we have to do is to organize, and then we will have to adopt a constitution for our organization.

Mr. Burke moved, seconded by Mr. Balfour, "That the architects present do organize under the name of 'The Ontario Association of Architects.'" Carried.

Moved by Mr. W. J. Smith, and seconded by Mr. Charlton, "That we do now hand in our names as members of this Association." This motion was put and carried. In accordance therewith, the names as previously given were taken by the Secretary and Mr. Balfour.

The draft of constitution was then considered.

SECTION I.—*Name.*—"The name of this organization shall be the Ontario Association of Architects." Adopted without amendment.

SECTION II.—*Objects.*—The objects of the Association are: To unite in fellowship the architects of the Province of Ontario, to combine their efforts so as to promote the artistic, scientific and practical efficiency of the profession, and to cultivate and encourage the study of kindred arts, and to endeavor to obtain legislation by which a standard of professional knowledge and experience will hereafter be required of all persons practising the profession."

This section was adopted as it stood, after some discussion by Mr. W. J. Smith, of Toronto, Mr. Alexander, of Ottawa, and Mr. Curry, of Toronto, as to whether it would not be better to make of the last clause a resolution separate from the constitution.

"SECTION III.—*Membership.*—The Association shall consist of Fellows and Honorary Members."

This clause was taken as objectionable. Mr. Rastrick, of Hamilton, said he considered in starting an organization of this kind, it ought to be made to include as many of the young men in the profession as possible, and he looked upon it as the greatest mistake that could be made to form any cast iron rules in reference to the admission of members. He therefore moved that the words "Fellows and Honorary Members" be struck out, and the following words substituted therefor: "Members, Junior Members, and Honorary Members." No seconder was found for this amendment, and it was therefore not put to the meeting.

In order to avoid any misunderstanding as to there being a number of grades which might arise out of the use of the word "Fellow," Mr. Watts moved, seconded by Mr. Gordon, "That the word 'Member' be substituted for 'Fellow' throughout the constitution and by-laws of the Association.—Carried.

"SECTION IV.—*Qualifications.*—Any architect engaged in the honorable practice of the profession in the Province of Ontario may become a Fellow of this Association. Honorary Members of this Association may be elected upon the recommendation of the Board of Directors, but all Fellows of the Association shall become Honorary Members when, after three years honorable standing as Fellows they resign the practice of architecture. Honorary Members shall not be entitled to vote, nor be eligible to office, nor shall they be assessed for dues or initiation."

Mr. Gordon moved, seconded by Mr. Alexander, that the above clause be amended to read as follows: "Any architect engaged in the honorable practice of the profession in the Province of Ontario, may become a Member of this Association. All Members of the Association may become Honorary Members when, after three years honorable standing as Members, they resign the practice of architecture. Honorary members shall not be entitled to vote, nor be eligible to office, nor shall they be assessed for dues or initiation." Carried without discussion.

"SECTION V.—*Officers.*—The officers of this Association shall be a President, three Vice-Presidents, a Secretary, a Treasurer and five Directors. All the officers shall form a Board of Directors for the care of the property and management of the general welfare of the Association, and shall report at each regular meeting." Carried.

"SECTION VI.—*President and Vice-President.*—It shall be the duty of the President to preside at all meetings of the Association. In his absence the chair shall be taken by the first Vice-President; in the absence of the first Vice-President by the second Vice-President; and, in the absence of the second Vice-President, by the third Vice-President."

Mr. Bousfield took objection to this clause, on the ground that the by-laws, rather than the constitution, should define the duty of officers.

The chairman put the motion to carry the clause as above without amendment. Carried.

"SECTION VII.—*Secretary*—It shall be the duty of the Secretary to take the minutes of the meeting and conduct the correspondence of the Association, subject to the Board of Directors." Carried.

"SECTION VIII.—*Treasurer.*—It shall be the duty of the Treasurer to collect all funds, and disburse the same on the order of the Secretary when countersigned by the chairman of the Board of Directors." Carried.

Moved by Mr. Arnoldi, seconded by Mr. Storm, that instead of Section IX as printed, a Section numbered 9, be inserted as follows.

"SECTION IX.—*Auditors.*—Two auditors shall be appointed at each annual meeting to audit the books of the Association, and report at the next annual meeting." Carried.

"SECTION X.—*Amendments.*—The Constitution may be amended by a two-thirds vote of the Fellows present at any regular meeting."

Moved in amendment by Mr. Rastrick, seconded by Mr. Watts, that Section X. be amended to read as follows: "That the Constitution may be amended by a two-thirds vote of the Members present at any annual meeting," That one month's notice in writing must be given to the Secretary of such proposed amendment, the Secretary to transmit a copy of such notice to each member, at least 14 days previous to the annual meeting. Any member from unavoidable circumstances unable to attend, or if absent from the meeting, may delegate any other member to vote for him at any meeting of the Association, but such authorization must be in writing within one month of the date of the meeting." Carried.

"SECTION XI.—*Status of Architect.*—The status of an architect is hereby defined as follows: An architect is a professional person whose sole ostensible occupation consists in supplying data preliminary to the material construction and completion of buildings, in exercising administrative control over the operations of contractors supplying material and labor incident to the construction and completion of buildings, and in officiating as arbitrator of contracts, stipulating terms of obligations and fulfilment between proprietor and contractor,":

In amendment to the above it was moved by Mr. Alexander, seconded by Mr. Burke, that Clause XI. read as follows: "The status of an architect is hereby defined as follows: An architect is a professional person whose occupation consists in supplying drawings, specifications and other data preliminary to the material construction and completion of buildings, in exercising administrative control over the operations of contractors supplying material and labor incident to the construction and completion of buildings, and in officiating as arbitrator of contracts, stipulating terms of obligations and fulfilment between proprietor and contractor." Carried.

Mr. Burke moved, seconded by Mr. Townsend, that the following Clause be next inserted:

"SECTION XII.—*Compensation.*—No Member shall accept direct or indirect, compensation for services rendered in the practice of this profession other than the fees received from his clients."

This was received with great applause and carried unanimously.

"SECTION XIII.—*Failure to Pay Dues.*—Should any member fail for one year to pay his dues, the Board of Directors may at its discretion, drop his name from the roll.

SECTION XIV.—*Misconduct.*—Should charges of misconduct be preferred against any member, they must be made in writing, and be signed by the person making such charges; whereupon the Board of Directors, at its next meeting, must take the matter up, and the said Board may, at its discretion, drop the name from the roll, and the decision of the Board shall be final and absolute. The member against whom the charges are made shall, however, have the right to be heard in his own defence."

Mr. Bousfield was of the opinion that the offences for which any member might be expelled, should be inserted in the clause. The chairman said in reply that it was the intention of the organization to have a committee on Ethics, and on the respectable practice of the profession, and he thought other offences against the common good would fall within the discretionary powers of the Board of Directors.

This clause concluded the consideration of the constitution *seriatim*, and Mr. Gregg moved, seconded by Mr. Bousfield, "That we do now adopt the Constitution as just considered. Carried.

Before the consideration of the by-laws, these nominations were made to the chair, to form a nominating committee to recommend officers for the current year: Messrs. Darling and Strickland, Toronto; Balfour and Mulligan, Hamilton; Alexander, Ottawa; McBride, London; Power, Kingston; and Belcher, Peterboro'. These gentlemen then withdrew so as to have their nominations before the meeting before first adjournment.

The meeting then proceeded to consider the by-laws.

ARTICLE I.—The annual meeting of this Association shall be held upon the third Wednesday in November, and at such a place as shall be designated by a majority vote of members at the previous meeting.

Moved in amendment by Mr. Arnoldi, seconded by Mr. Wilson, that the word November be eliminated, and February substituted therefor. In making this motion, Mr. Arnoldi said he thought that November was probably the busiest season of the year. He knew it was in Ottawa and presumed it was elsewhere. This was a matter worthy of consideration by

members who were in any way tied to their business, and it might have the effect of reducing the number present. Amendment lost.

Moved by Mr. Storm, seconded by Mr. Balfour, that Article I of the by-laws be amended by adding: "The annual meeting of the Association shall be held upon the third Wednesday in November, or such other time as the Board of Directors may fix, and at such a place as shall be designated by a majority vote of members at the previous annual meeting." Carried.

"ARTICLE II.—The meetings of this Association shall be conducted in accordance with 'Todd's Parliamentary Practice.'" Carried.

"ARTICLE III.—All officers shall be elected annually by a majority ballot vote at an annual meeting of this Association." Carried.

"ARTICLE IV.—All papers, books and other records shall at all times be open to the inspection of the members of this Association." Carried without any discussion.

"ARTICLE V.—All members of this Association shall pay an annual fee of $5."

In amendment Mr. Balfour moved, seconded by Mr. Alexander, that all members of the Association shall pay an annual fee of five dollars, which must be paid not later than May 1st, in each or every year or part thereof, and that members in arrears shall not be entitled to vote at the annual meeting. Carried.

Some one asked here when this fee should be paid, and the chairman in reply stated that it was understood all members present would pay their $5 fee before leaving, whether their neighbor did or not. (laughter.) There would be a provision later on regarding new members.

"ARTICLE VI.—All applicants for membership in this Association shall be referred to the Board of Directors, who shall investigate their standing, and, if found qualified, recommend them for election." Carried.

"ARTICLE VII.—All applicants for membership recommended by the Board of Directors are to be voted upon by letter ballot, and thirty days are to be allowed members in which to return their ballots. Five ballots cast against any such applicant will be sufficient for his rejection."

It was moved by Mr. Townsend, that instead of five ballots rejecting a man, it should be 25 per cent. of those present.

Moved in amendment by Mr. Storm, to insert that on the return of the ballot papers the Board of Directors appoint scrutineers for counting the ballots. The article was carried thus, combined with Mr. Townsend's amendment.

Mr. Curry moved, seconded by Mr. Gregg, that Article 7 be re-considered. Carried.

Mr. Curry then moved that instead of 25 per cent. being necessary to keep a man out, 10 per cent. should be sufficient, and in support of this argued that they didn't want as members any persons who after the recommendation of the Board of Directors, could not carry 90 per cent. of the votes of the Association.

Mr. Arnoldi replied, opposing the amendment on the grounds that it was too bad to reject a man by 10 votes out of a hundred.

Mr. Lennox supported Mr. Curry, and the motion was carried with this addition: "and that on the return of the ballot papers the Board of Directors shall appoint scrutineers for the counting of the papers, whose names shall be submitted to the Association together with the ballot papers."

"ARTICLE VIII.—Twenty members shall form a quorum for the transaction of business."

In amendment Mr. Gregg moved, seconded by Mr. Storm, "That twenty members shall constitute a quorum of the the Association for business, and that five officers form a quorum for the Board of Directors' meeting." Carried.

"ARTICLE IX.—Moved by Mr. Arnoldi, seconded by Mr. Edwards, that a special meeting of the Association may be called at any time that the Board of Directors may consider necessary for the furtherance of the business of the Association, and a general meeting of the Association shall be held at any time upon requisition signed by 25 members in good standing, to the Board of Directors, giving fifteen days notice to the members of such meeting, and stating the business to be considered." Carried.

ARTICLE X.—Moved by Mr. Arnoldi, seconded by Mr. Walton, that "the fiscal year of the Association shall end on the 31st day of October in each year, to which date the books of the Association shall be made up and audited by the Auditors appointed at the annual meeting."

"ARTICLE XI.—The By-Laws of this Association can be amended at any meeting by a vote of two-thirds of the members present." Carried.

During the discussion of this clause, in reply to an enquiry, the chairman stated it was the intention that the power of voting by "proxy" should apply only to changes of the Constitution.

"ARTICLE X.—The ordinary travelling and hotel expenses of officers and committees attending business meetings shall be defrayed out of funds in the treasury of the Association subject to the approval of the Board of Directors." Carried.

Moved by Mr. Gouinlock, seconded by Mr. Storm, that the CANADIAN ARCHITECT AND BUILDER be appointed the official organ of the Ontario Association of Architects." Unanimously carried.

"ARTICLE XIII.—Moved by Mr. Curry, seconded by Mr. Soule, that a member shall after election pay his fees within two weeks. Carried.

"ARTICLE XIV.—Moved by Mr. Curry, seconded by Mr. Soule, that the Board of Directors meet at the call of any three members of the Board.

The by-laws were then adopted in full, having been previously passed, clause by clause.

Mr. Darling, on behalf of the nomination Committee, presented the report of the Committee, recommending the election of the following officers: President, W. G. Storm; first Vice President, Mr. Arnoldi, Ottawa; second Vice President, Mr. Durand, London; 3rd Vice-President, James Balfour, Hamilton; Secretary, S. H. Townsend, Toronto; Treasurer, Mr. D. B. Dick; Directors, Messrs. Belcher, Burke, Power, Mulligan and Curry.

The chairman asked if these names were acceptable, and on motion of Mr. Gregg, the report was adopted.

Mr. Gregg said that without any reflection whatever on Mr. Townsend, it was desirable that Mr. Langton should be secretary. Hereupon Mr. Langton declined to act, stating that he would esteem it a pleasure to be of assistance, but feared his knowledge of business was deficient.

Mr. Lennox also favored Mr. Langton as secretary, reciting his labors in the interests of the meeting as an indication of his willingness, and stating that he thought Mr. Langton amply qualified for the position.

Mr. Langton put an end to the discussion by declining to act.

In taking the chair, Mr. Storm said: Gentlemen, this is an unexpected pleasure to me, for I had but little idea when I came here to assist in the formation of our Association, you would honor me by making me one of your officers. I sincerely, heartily and gratefully thank you for the honor you have bestowed upon me. (Applause.)

A vote of thanks to Mr. Durand for his services as chairman of the meeting, was moved by Mr. Lennox and seconded by Mr. Gemmell.

Mr. Durand replied, thanking the members for their courtesy and saying he did the best he could as chairman and was as pleased as any present that his efforts had been successful. Said he: "I think if there is one thing that has helped me more than another, it is the fact that I have no knowledge whatever of that book known as 'Todd's Parliamentary Rules,' and which we have now adopted for our future guidance." (Applause and laughter.)

Mr. Bousfield moved, seconded by Mr. Paull, that the hearty thanks of the meeting be tendered to Mr. Langton for his services to-day and in connection with the calling of the meeting. Carried unanimously.

Mr. Langton replied: I have to thank you gentlemen for your kindness. I would be willing to do a great deal more in the future than I have done this afternoon to advance the profession. (Applause).

Mr. Edwards: There is just one thing yet to do. I think we should express the thanks we feel to the gentlemen who have been instrumental in bringing about this meeting. I would therefore move, and I am sure I express the sentiment of all those present, that we do now place on record our hearty appreciation of the efforts of the gentlemen who arranged this meeting.

Mr. Durand: I have pleasure in seconding this, and would couple with the motion the names of Messrs. Curry and Townsend, who may perhaps give us some history of how their efforts were made. (Applause.)

Mr. Curry in responding said: I don't want to waste the valuable time of the meeting in making a bad speech. (Laughter). So far as any personal effort of mine is concerned, I am very glad, and will always be glad to be of any possible service to my fellow laborers in a profession of which we all are proud, and which I trust we will all seek to maintain. I am very well satisfied with the way the meeting has turned out. There has been shown here an interest which if continued to be manifested, will ensure the success of this organization. I don't think there is one here who will go away with the idea that our Association is not going to be a success (cries of no, no). Speaking for myself I will certainly do all I can to make it a success. A good deal depends on good officers, and more especially on a good secretary, such as I believe you have in Mr. Townsend. (Applause.)

Mr. Townsend: I am not going to attempt to make a speech. With the interests of the Association and of my profession at heart, I will do all I can to make our labors a success. We have certainly had a very successful meeting here to-day. Again I thank you for your kind expressions.

Mr. Darling: I am obliged for what you have said. Any work that I may have done in assisting in our organization has given me the greatest of pleasure, and I hope now we will see our Association a continued success. (Applause.)

Moved by Mr. Balfour, seconded by Mr. Darling, that all practising architects in Ontario who join the Association and pay their fee within one month shall be admitted on the same terms as those present. Carried.

The form of application was approved of with the change "drawing or photograph" instead of "photograph."

Moved by Mr. Lennox, seconded by Mr. Gregg, that the appointment of Standing Committees such as are necessary for conducting the business of the Association be for this year left in the hands of the Board of Directors. Carried.

On motion of Mr. Lennox, seconded by Mr. Gregg, it was decided to hold the next annual meeting in Toronto.

THE BANQUET.

In the evening the Architectural Guild of Toronto entertained the members of the newly-formed Association at a banquet at the Queen's Hotel. The *menu* was of the choicest character, and in the discussion of its merits closer acquaintanceships were formed and feelings of hearty cordiality engendered. Mr. D. B. Dick presided, the vice-chair being occupied by Mr. W. G. Storm. These gentlemen performed the duties of their respective positions in an exceedingly graceful manner. In opening the toast list, the chairman said the present was the first occasion upon which any considerable number of the architects of Ontario had met together. He might go farther and say it was the first time that all the architects of Toronto had met together. True an attempt was made some twelve years ago to form

an Architectural Association, but for reasons which he need not enumerate, the undertaking proved a failure. There was no doubt that hitherto the profession had been too Ishmaelitish in its character. If the architects would in future stand by each other they would receive the treatment accorded to members of other professions. He would not deprecate honest criticism among architects, which was a different thing from the underrating spirit too often met with. There was no necessity for the indulgence of such a spirit, as owing to the growth of the country, there was plenty of room for all. Referring to the question of incorporation, the speaker said a standard of education, and the means of getting such a standard, was first necessary. In his efforts to establish in the city of Toronto a chair of architecture, the Minister of Education had the sympathy of all architects.

Mr. Curry, secretary of the Guild, read letters of apology at their inability to be present, from the Hon. the Minister of Education, His Worship the Mayor of Toronto, Messrs. Alan Macdougall, Toronto; Fuller, Government architect, Ottawa; Stewart, Hamilton; Adams, Kingston; Day, Guelph; Post, Grist, Ottawa; and Jones, London.

The chairman proposed the toast, "Our Professional Guests," coupled with the names of Messrs. Arnoldi, Balfour and Durand.

Mr. Balfour said the architects had themselves to blame for the lack of proper recognition by the public. He thanked the Architectural Guild for having brought the present meeting together. The fight for their rights on the part of the architects must be done now or later on, and in his opinion it had better be done now.

Mr. Durand was surprised and highly gratified at the successful commencement which had been made. The result must be to raise the status of the profession throughout the Province. He could ask no higher honor than the Association had conferred upon him in electing him as one of its vice-presidents. Every member should work for incorporation; and twelve months hence he hoped the Association would be in a position to ask for incorporation.

Mr. Alexander, in the absence of Mr. Arnoldi, referred to the success which had thus far attended the formation of the Ottawa Institute of Architects, and the benefits which would result to the profession and the public if incorporation were obtained. He hoped to see the movement succeed.

In calling upon Prof. Galbraith to respond for the cause of technical education, the chairman referred to the value of such instruction to the student of architecture, who, in the practice of the profession, had so much to do with mechanics. The architect was supposed to teach half a dozen different trades, and hitherto had been obliged to pick up as best he could the practical knowledge pertaining to them.

Prof. Galbraith remarked that architects and engineers stood in much the same relation to technical education. The students of the present day in these professions who hope to succeed must have technical education. Technical schools could not make of a student a perfect professional. They should enable him to read and understand scientific books. The practical part of his education should be learned in the office and by actual practice. In the case of architectural students there was also to be considered the question of artistic education, which was quite as important as the other. He did not feel competent to express an opinion as to how a knowledge of art should be taught in schools, though a certain amount of art training could and should be got in school. The ultimate measure of a student's success must depend upon his adaptability for the profession he seeks to enter. The formation of this Ontario Association of Architects marked a new era in the architectural history of this country. It should be the duty of the Association to endeavor to secure a standard of qualification for the practice of the profession.

The vice-chairman, W. G. Storm, spoke of the joy which the work so successfully accomplished that day had given him. He believed the Ontario Association of Architects contained as good metal as any similar organization on this continent.

Mr. F. J. Rastrick said the profession in Canada had hitherto been lacking in the feeling of brotherhood which should obtain amongst members of such a noble profession. He congratulated the architects present upon the good day's work that had been accomplished.

Mr. Burke pointed out that the success of the association would depend upon every member maintaining a proper standard of ethics. This standard of ethics was briefly comprehended in the golden rule "Do unto others as you would they should do unto you."

Mr. Gordon referred to the effect of the architect's work upon the education of the public, and urged the study of the ancient architectural history and the best models of Greek and Gothic architecture, in order that their work might have an ennobling effect.

The toast to "The Architectural Guild of Toronto," was received with great enthusiasm and was responded to by Mr. S. G. Curry.

At intervals during the evening the proceedings were enlivened by songs from Messrs. Mulligan and Denison.

The annexation of Parkdale to the city of Toronto will compel the city to appoint a third inspector of plumbing. It is a well-known fact to those acquainted with the subject that even three inspectors will not be sufficient to insure the proper performance of the work. We would suggest the appointment of two new inspectors.

KENT AND CHATHAM PUBLIC BUILDINGS.

ONE of the first official acts of the Board of Directors of the Ontario Association of Architects, was to instruct the Secretary to recommend members of the Association to abstain from entering the proposed competition for the Kent and Chatham Public Buildings. Objection is taken to the conditions of the competition on the following grounds: (1). There is no guarantee that a competent professional adviser will be employed to report upon the merits of the respective designs; (2). The commission proposed to be paid for carrying out the work is below the recognized professional tariff; (3). The drawings for which premiums are awarded are to become the property of the committee; (4). Much more detail is required in the preparation of the drawings than is at all necessary to properly illustrate the proposed building.

LIST OF COMPETITORS IN TORONTO BOARD OF TRADE BUILDING COMPETITION.

THROUGH the kindness of Prof. Ware, New York, we are enabled to publish the names of the competing architects in the recent Toronto Board of Trade Building competition. Prof. Ware informs us that the list is complete with the exception of two names, one of which was accidently mislaid or lost, and the other was never sent in. With these exceptions, the names are as follows:

Messrs *Darling & Curry, *Langley & Burke, Edwards & Webster, R. W. Gambier-Bousfield, Knox & Elliot, Toronto, Canada; Jas. R. Rhind, Montreal, Canada; Messrs. George B. Post, Alfred H. Thorp, E. G. W. Dietricht, New York City; *R. A. Waite, Buffalo, N. Y.; Messrs. James & James, (to whom the work was awarded), E. F. Tassett, Kansas City, Mo.; L. G. Hall, Columbus, Ohio; Mr. J. E. O. Pridmore, Chas. F. Longfellow, Chicago, Ill.; C. C. Yost, Minneapolis, Minn.

*Those marked thus were invited to compete by the Committee.

CHURCH BUILDERS.

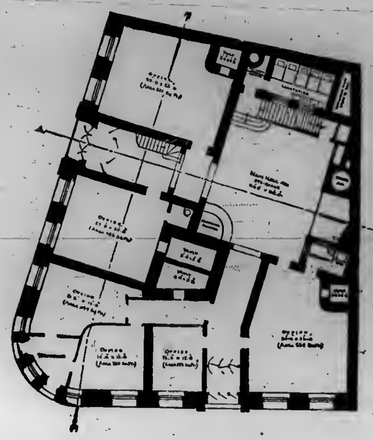
BY SIR DANIEL WILSON, LL.D.

IN building a legislative hall, a court of justice, a university convocation hall, or any other structure designed for special use, it is demanded of the constructor that it shall be so adapted to its requirements, that all shall, as far as possible, see, hear and in all other needful respects find no obstruction to the work carried on therein. Is there any reason why the same rule should not apply to church building?

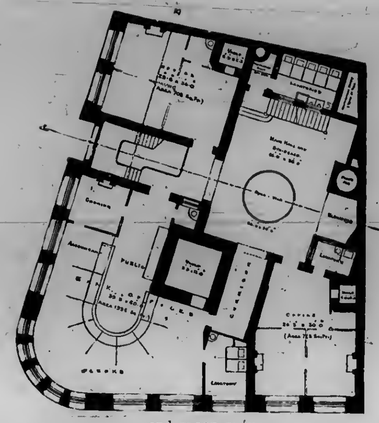
The exquisite beauty of the cathedrals of older centuries charms every thoughtful observer; and the picturesque little parish church of the village or hamlet is a delightful feature in the landscape, whenever the tourist wanders through the mother land. But the old architects never lost sight of practical utility.

The long-drawn aisles, transepts, and chantry chapels, were not erected as mere ornaments to the cathedrals and collegiate churches of Roman Catholic countries; and were accordingly erected with a thorough aim at utility. This the great English architect, Sir Christopher Wren, thoroughly appreciated when he undertook the design for the new St. Paul's Cathedral. He set before his mind the essential requirements of Protestant worship, and accordingly designed a cathedral adapted to accommodate a large body of worshippers who should be able to see, hear, and unite in the worship in accordance with the manifest purpose of the Book of Common Prayer. The original design of the great architect for a model Protestant Cathedral was cast aside, just because the Stuart king had no sympathy with Protestant worship.

Without any such reason, our own church builders have so habitually followed the models derived from mediæval times, that the majority of our churches are still built in the form of a long parallelogram with rows of pillars dividing them into centre and side aisles. To this is frequently added a long, narrow chancel, with the result that, wherever the pulpit may be placed, fully a third of the congregation can neither see nor hear satisfactorily; and when portions of the service are read at the communion table, within the deep recess of the choir, or the regular announcements are made, they are inaudible to the larger por-



1st FLOOR PLAN.



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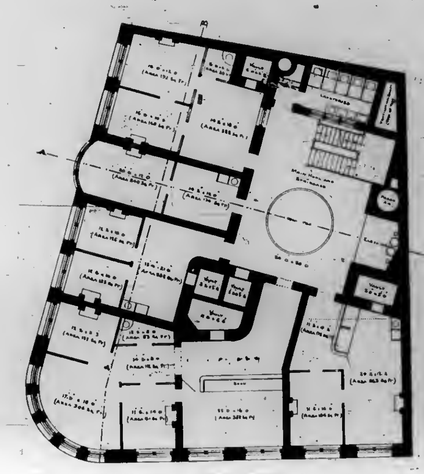

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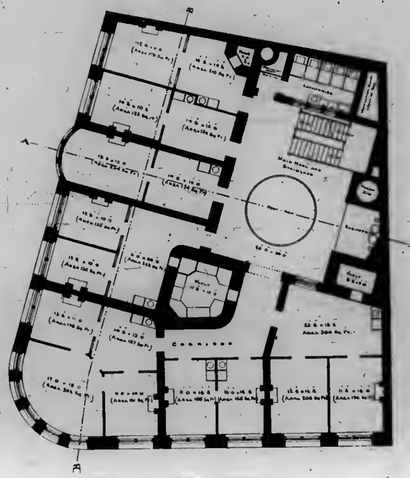
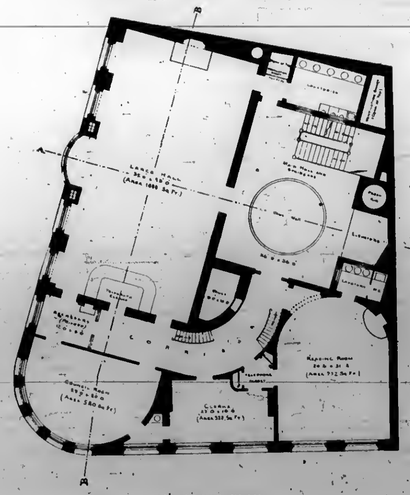
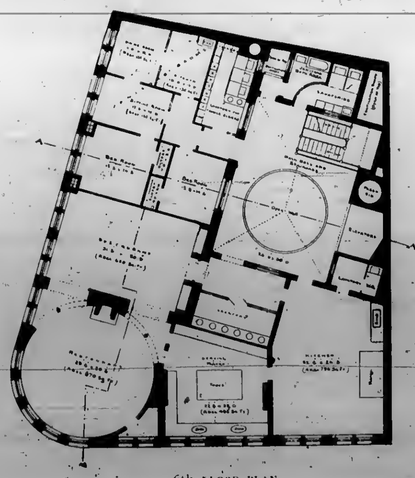


4th FLOOR PLAN.



5th FLOOR PLAN.



6th FLOOR PLAN.

COMPETITIVE DESIGN FOR NEW TORONTO BOARD OF TRADE BUILDING.

MESSRS. DARLING & CURRY, ARCHITECTS, TORONTO.

tion of the congregation. While such continues to be the general practice of the Church of England in Canada, large, commodious, and frequently beautiful places of worship are being erected for other denominations, where the wants of the whole body of worshippers have been made the primary aim of the architect. All are so seated that they can see, hear, and join intelligently in the worship. The value of this as an attractive element can scarcely be overrated. Let any one sit behind a pillar, or in a transept or side aisle, such as may be found in a good many of our Canadian churches; and after straining his neck, and quickening his ear, in the vain effort to see or hear, then pass to one of the commodious places of worship of many modern Presbyterian or Methodist congregations, and the contrast can scarcely fail to impress him.

There is no reason that the modern church shall be less beautiful architecturally, or less distinctively expressive in form and structure as "the house of God," because of its being constructed in harmony with the manifest aim of the Book of Common Prayer as a service in which the whole congregation, ministers and people, are to join intelligently, "with one heart and voice"; a service of grateful praise, and prayer, and thanksgiving, such as we believe to be "a reasonable service" acceptable to God.—*Evangelical Churchman.*

OUR ILLUSTRATIONS.

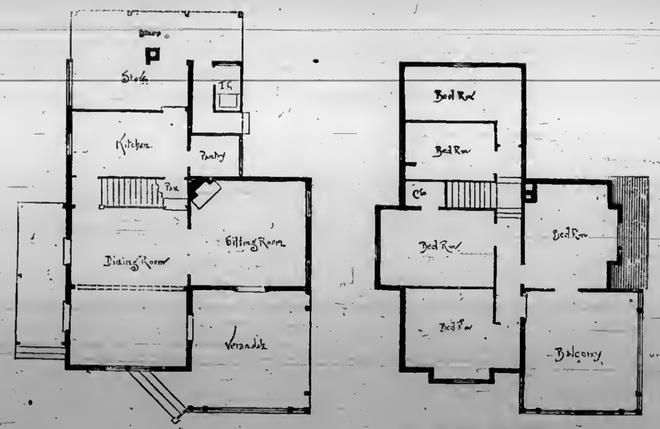
COTTAGE AT NIAGARA-ON-THE-LAKE FOR MR. PEMBERTON PAGE.—MESSRS. EOWARDS & WEBSTER, ARCHITECTS, TORONTO.

COMPETITION DESIGN FOR NEW TORONTO BOARD OF TRADE BUILDING SUBMITTED BY MESSRS. DARLING & CURRY, ARCHITECTS, TORONTO.

TORONTO, March 31st, 1889.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—The author of the design for a cottage illustrated in your last number must be in error when stating that the cost of a house built according to that design would be $3,800. I do not believe that it could be built in a substantial and thorough manner in keeping with the design for less than $6,000 or $7,000. There has been far too much competition among architects for the good of the profession, as to who could build the cheapest. The result has been bad, for when people who are building or who have just built, are informed that a house of the latest high art character has been erected for some paltry sum utterly inadequate to build a good and substan-



COTTAGE AT NIAGARA-ON-THE-LAKE FOR MR. PEMBERTON PAGE.—MESSRS. EDWARDS & WEBSTER,—ARCHITECTS, TORONTO.

tial building, they immediately consider that they have been imposed upon by their architect if their house has cost more than the sum given as the cost of the house of outside show and inside flimsiness. An accurate statement of the cost of erecting a house according to an illustrated design would be valuable information ; but a statement which any member of the profession is aware is false, and which will only be believed by those not posted, is misleading and injurious to the best interest of architecture. I would suggest that you do not give the cost of erecting buildings according to the designs illustrated, except when it will be especially valuable, and only then when you have reason to believe the statement absolutely correct. Responsible and competent men should not be driven into competition in cheapness by the careless, if not intentionally inaccurate statements of architects or supposed architects. Moreover, it is not desirable that architects should use your columns as a means of advertising their ability of doing inferior work, for cheap work in the majority of cases is bad work, and nothing else can be made of it.

Yours truly,

"ESTIMATE."

QUERIES AND ANSWERS.

(Reply to Query No. 4.)—Fusil oil will remove varnish from wood-work so as to allow of the wood being stained another color, except in cases where oil has been mixed with the varnish. In such cases a weak solution of lye will effect the removal of the varnish, after which the wood can be put in condition to receive a stain of another color by being rubbed with vinegar.

P. T. R.

In your last number I noticed in answer to a question in the February issue, rules for ascertaining the safe distributed load which a beam will carry. The rules given are in my opinion inaccurate, and I have therefore thought proper to give rules which are accepted by competent authorities. It is important that a formula should be simple but more so that it be accurate. To determine the safe distributed load which a beam will carry, the following formula may be used.

$$\frac{2 \times b \times d2 \times c}{l} = w.$$

To obtain the breadth of a beam, the other quantities being given, use the following formula :

$$\frac{w \times l}{2 \times d2 \times c} = b.$$

To obtain the proper depth of a beam where the other qualities are known, use this formula

$$\sqrt{\frac{w \times l}{2 \times b \times c}} = d.$$

w = safe load in pounds.
b = breadth of beam in inches.
d = depth of beam in inches.
l = length of span in feet.
c = value of material in beam.

American ash	111.
" red beech	100.
" yellow birch	90.
" white cedar	55.
" elm	77.
New England fir	83.
Hemlock	66.
American white oak	105.
" white pine	80.
" yellow pine	125.
" spruce pine	90.
Michigan pine	85.

Example :—What is the safe distributed load which a beam 6 inches wide 10 inches deep and spanning a distance of 12 feet will carry ?

$$\frac{2 \times b \times d2 \times c}{l} = \frac{2 \times 6 \times 100 \times 80}{12} = 8000 \text{ lbs. safe distributed load.}$$

What should be the breadth of a beam to carry a distributed load of 8000 lbs. with a span of 12 feet and depth of 10 inches?

$$\frac{w \times l}{2 \times d2 \times c} = \frac{8000 \times 12}{2 \times 100 \times 80} = 6 \text{ inches the breadth of beam.}$$

What depth of beam is required to carry a distributed load of 8000 lbs., when the beam has a span of 12 feet and breadth of 6 inches ?

$$\sqrt{\frac{w \times l}{2 \times b \times c}} = \sqrt{\frac{8000 \times 12}{2 \times 6 \times 80}} = 10 \text{ inches depth of beam.}$$

By working out the above examples we have shown that the rules prove each other, and must be accurate. The only point of doubt is the value we should give the constant C. and we have no better method than to go to the best authorities in such matters. It is true that we will find the authorities differ very materially, but with a little patience and study we may determine which of them is nearest being accurate. A student should consult the very latest works, by the best authorities on all subjects, and not be satisfied to work according to formula, which has been found unreliable years ago.

JULY.

Mr. James R. Rhind, Montreal, has been appointed assistant architect to H. Saxon Snell Esq : F. R. I. B. A., M. C. S. I., F. M. S., &c, London, England, on the Royal Victoria Hospital, the munificent gift of Sir Donald A. Smith, and Sir George Stephen, Bart., to the city. Mr. Snell is a specialist on hospital construction and arrangement, and has built many of the largest and most important hospitals in the Old Country,

A PROVINCIAL ASSOCIATION OF BUILDERS AND CONTRACTORS.

GUELPH, March 22nd, 1889.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—I am perfectly satisfied that it is time some steps were taken for the better and fairer protection of builders against the many disadvantages under which they labor, and I am willing to assist in any way in the formation of a Provincial Association of Builders and Contractors.

Yours truly,

JOHN H. REDWOOD.

LONDON, ONT., April 10th 1889.

EDITOR CANADIAN ARCHITECT AND BUILDER.

SIR,—Regarding the formation of a Provincial Builders' Association, the subject has been before the Builders' Exchange of this city, and the opinion is that the proposal might be a good one. We think if the builders of Toronto (that being the largest city in Ontario) were to make some move in the matter of calling a meeting for organization, our Exchange would very likely send a representation.

Yours respectfully,

H. C. SIMPSON,
Secretary of Builders Exchange.
814 Dundas Street.

PRESCOTT, March 13, 1889.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—In reference to the proposed Association of Contractors and Builders, allow me to say, that doing at present only a small business, I am not so much affected by trade grievances as others in a larger field. I shall, however, be pleased to lend my mite of assistance towards the furtherance of so praiseworthy an object as the formation of such an Association, and shall be glad to hear further concerning the matter.

Yours truly,

H. HORWOOD.

COLLINGWOOD, March 14, 1889.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—In reply to your letter of the 9th, I think that such an Association would be of great benefit. I know that heretofore our own town we have had in the past a great many difficulties to contend with, and if such an Association could be formed I think it would result in doing a great deal of good, more particularly in large centres than in small towns. I would be quite willing to give any assistance to the forming of such an Association, as I feel sure that it would be at least the means of ventilating and tending to the removal of differences that may arise from time to time.

Respectfully yours,

ROBERT BURDETT.

HAMILTON, April 2, 1889.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—In perusing your March issue, I was very pleased to see unmistakable signs of a Provincial Association of Builders and Contractors being formed. As an Englishman, I have always held that a man should be free and independent, and carry on his business as he best sees fit ; or in other words, to use an old expression, "Let every tub stand on its own bottom." But, in our onward march through life we have discovered that some "tubs" have no "bottoms," and to my mind herein lies the difficulty such an Association would have to contend with. My experience with Associations of Builders and Contractors is (though I am sorry to say it) that just so long as it suits their convenience they are honorable, but no longer. Now, sir, this should not be. When we consider the forces with which we have to contend, we should stand shoulder to shoulder whether it suits our convenience or not—always providing that the cause is a righteous one—and I presume such an Association is not contemplated for any other purpose.

I feel that the subject is a very exhaustive one, and requires a more able pen than mine to show forth its advantages. Of one thing I am certain,

the time has arrived when something in this direction ought to be done. It is a lamentable fact that as things exist we can scarcely do an honest, legitimate business, and pay 100 cents in the dollar. In making this statement, I am saying what I know to be true, and doubtless numbers of your readers can bear me out in what I say. This deplorable condition of affairs is caused by the class that my friend and your correspondent, Mr. Piggott, in your last issue, referred to—who suddenly conceive the idea that they will go "bossing," and who have not one cent of capital to put in the business in which they intend to embark, and who consequently have nothing to lose should they fail, as so many of them do to the discomfiture of their creditors. The latter, however, are entitled to very little sympathy. This state of things is far from being fair to the honest contractor, who is thus handicapped. How is it possible for him to do a legitimate business ?

How can this state of things be amended ? may be asked. There are many ways and means which could be employed. I think right here is where the proposed Builders' and Contractors' Association could work effectually to remedy the present state of things. My first suggestion is : No man should be allowed to become a member until he has first proved himself to be skilled in his particular business, and to have a good reputation in the community. Secondly, the dealers and merchants could materially assist us, and in doing so would benefit themselves as well, by not giving credit to men without first having ascertained whether they are worthy of it. I claim if this was done it would be of vast benefit both to contractors, merchants and also to proprietors. The latter would not then, as now, be put to inconvenience by liens being placed on their buildings. In the third place, the architects could and should assist us in every way in their power.

Pardon me if I appear to digress a little from the subject just now. I noticed in your March issue an article from my friend F. G. Rastrick, architect, in which he winds up by saying "We are determined with the aid of our brother architects in the province to raise the status of the profession to its proper level." I was right glad to see that the architects had come to that determination, because if they carry it out, I am very sure the status of contractors and builders will also be raised to its proper level, and all the shoddy work now being done on buildings will be abolished, and as a consequence, the shoddy contractors also, which would be a lasting benefit to all parties concerned. Pardon me if I have trespassed too much on your valuable paper, but I could not resist the temptation which you put in my way of ventilating my feelings. Trusting to hear from many others on what I consider to be a subject of vital importance, I am,

Yours truly,

ALFRED HANNAFORD.

SUGGESTIONS FOR BUILDERS.

BY OWEN B. MAGINNIS.

IN raising framed walls, it is best when possible, to raise the framing in sections instead of putting up single sticks, the usual practice. For instance, in raising an end wall, the corner post, girts and braces (if they are framed in), should be put together and draw-pinned and the whole bent raised at once. In ordinary work a man at each post will be enough to raise it, with a rope and a man pulling attached to the centre of the girt. Temporary board braces can be nailed on to secure the posts plumb when they are upright. After the opposite bent is raised, the cross ties are raised up and slipped into their mortises and pinned. Crooked and bent studs should always be set in position with their hollow side out, as the boarding will draw them forward and make a straight surface on the face of the wall, whereas, if the round sides be kept out it will be liable to render the wall bulgy and uneven. All window and door studs should be double and care should be taken to keep them back far enough, or rather to make the window opening wide enough to ensure at least 2½ inches between the back of the pulley stile in the frame and the stud, also to have the face of the stud either straight or at least hollow, this being done to leave room enough to allow the sash weights to run. Door studs should always be straight. Pitched bridging in partitions is infinitely preferable to straight, as the settlement of the partition will tighten the former when the latter will get looser and crack the wall as it settles down. Each piece ought to fit well against each stud, and be marked at each opening. If the walls are high, four inch partitions should have a double row of bridging, as the joists are very springy on their flat, and the bridging stiffens them a great deal.

Another important precaution is to mark the exact positions of the studs on the floor with a piece of chalk, or black lead ; the object in doing this is that at will save a carpenter a lot of time sounding the wall to find them, and prevent the soft plaster from being marked when putting down base or nailing on chair rail, etc. Brick wall spruce furring ought in all cases to be more thorough than it usually is, that is to say well nailed into the brick joints and spaced for the lathe. It is too bad to put extra expense on the contracting plasterer by shaking the furring and plaster all to pieces when the carpenter is putting on his base or chair rail, causing more patching, especially where hard wood trim is specified, which jars more in nailing. When it can be managed, I would recommend builders to do all the furring for base before the plaster is put on; ¾ scrap strips will do it admirably, and it will make the wood work fit nicely against the plaster, but I would not favor the practice of setting window and door jambs before the white coat is applied, as not only are they liable to be spattered over with plaster, but the edges and arrises are in danger of being broken off, spoiling the appearance of the work. The plan, however, has its merit, as it makes the plaster come fair with the edges, and ensures the trim fitting close against, but it ought not to be followed even in common work.

While writing on this subject let me advise builders to see that their jambs are got out wide enough at the shop or mill, to span the plaster when they are set in the building. There is a great deal of time lost when these are narrow, because the plaster has to be dug off to make the casings come fair on the face. If there be a double floor it is best to put the base down first and to fit the finishing floor up against its face, by this means providing against the liability of the base to shrink and show the joint at the floor.

In balloon framing it is not usual to use braces of any description, but even though this be the rule, a house is scarcely *well framed* without a brace of some kind. Some builders in the State of New York insert a brace at each angle, the upper end of which fits under the girt and against the corner-post, and the lower end sits on the sill about 2 feet or more from the corner-post. This gives a very effective brace and costs little, as only one wall stud has to be cut to it. It is generally made of a wall strip.

MONTREAL.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

BUILDING prospects are considered very good. Much work which was placed in the hands of the architects a year ago, when a drop in prices of building materials was anticipated, and withdrawn when prices refused to drop, will be carried out this season. The largest structure to be erected will be the new hospital. A large number of residences will be built.

Plans are being prepared for alterations to block on Beaver Hall Hill to cost $3,000, for two new houses on Dorchester St., west, to cost $6,000 each ; and stores on St. Catharines St. west, to cost about $5,000. Mr. P. Williams is the architect.

The Department of Public Works, Ottawa, has been asked to adopt the scheme for the construction of a canal from above Victoria bridge to a point opposite Boucherville Island as the best means of preventing floods.

Mr. Roswell Fisher will erect a five story apartment house at the corner of Sherbrooke and Crescent Sts. The structure will be built of stone and red brick, and is designed to be fire proof. Each floor will contain four homes, each home consisting of kitchen, maid's pantry, bath and W. C. and from four to seven family rooms.

The Council is to be petitioned to sanction the widening of St. Lawrence street to be continued north of Sherbrooke. The average increase in width would be 15 feet. The value of land to be expropriated would be $30,000 and the value of buildings about $300,000. It is proposed that the cost of the work, about $50,000 should be assessed equitly upon the property-owners and the city.

WINNIPEG.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

Our city fathers seem afraid to come to a decision re "The Market Competition," and they have made a regular mess of it. They first of all advertised for competitive designs on such ridiculous conditions, that none of the architects would submit plans. The Council then amended their resolution to suit the architects, and on the 6th of March six different designs were received by them. Now they do not know what to do with them. The committee recommended one of the designs, and then changed their minds and wished all the designs to be returned and new ones made, as they had decided to pull down the old building. Now it is all referred to an expert (?). This expert is one of our city contractors. That the council are doing their best to insult the profession, is what most people would think upon reading any of the resolutions in regard to the competition.

The Provincial Government have invited six architects in the Province to submit designs in ink, to an ⅛ inch scale and bill of quantities, for a reformatory, to cost $20,000 ; a home for incurables, to cost $15,000 ; and a deaf and dumb asylum, to cost $15,000 ; all to be of solid brick with stone foundations and basement. These designs are to go in on the 10th, 17th, and 24th inst. It is to be hoped the Government will decide on their architect as soon as possible, or contractors and men will be looking elsewhere for work, as there are not any other jobs of consequence actually decided upon.

Mr. Fisher will erect a private residence of stone to cost $5,000. The Methodists of Moosomin intend to build a church this season. Mr. Henderson of Carberry, is building a small house. The trustees of the Children's home will build a new home. Mr. Van Allan is building a private house.

A BUILDING BUREAU.

ONE of our correspondents writes as follows : "I am glad to see that the Toronto City Council is considering a building by-law—an ordinance which is urgently needed in this city—and it is with satisfaction that I observe the names of two of our leading architects on the special committee which is dealing with its construction.

The plumbing by-law was left very much to the tender mercies of providence in its last stages. No professional men were on the committee, with the result that there were a number of conditions introduced into it which a professional mind could have rectified and eliminated. The Architectural Guild, which we soon hope to recognize under a more cosmopolitan name

has done good work in helping to frame this proposed building by-law. Both the above named by-laws treat so directly with construction, it will be a simple matter to consolidate their working under one official head, and it will be a necessity to do so before long, as architects and others engaged in the building trades will find it a great inconvenience and loss of time to wait on two departments for acceptance of plans and issue of building permits. The work to be done under these by-laws will be considerable at the outset, and will certainly increase rapidly. The head of such a department ought not to be long in office, before he would be called upon to examine and report upon many buildings the city could well do without.

The formation of a building bureau, department, commission, or what ever name you please, with a trained and experienced *professional* man at its head—not one of your "practical" men, but one who could examine into the points of construction in plans placed before him, and give decisions on technical points of construction, and architectural design—will be of incalculable benefit to the city."

ENGINEERING SOCIETY.

THE Engineering Society held its annual meeting in the School of Practical Science on Saturday evening, the 30th March, President H. E. T. Haultain in the chair. The minutes of last meeting were read by the secretary and approved. The report of the general committee for the session 1888-9 read by the president, showed that the Society was in a flourishing condition, and since last session had made several improvements, notably amongst which were the commencement of a library and the placing of Engineering periodicals on file. The secretary-treasurer's report showed an increase of 26 in the membership, and that the Society was in a prosperous state financially. The corresponding secretary reported that twelve papers had been read before the Society during the current session, two of which were from graduates of the school. The various papers read and discussions held were interesting and instructive to the members, as manifested by the large attendance at the ordinary meetings. The Librarian's report showed that the newly founded library contained some one hundred and fifty books of reference, five weekly engineering papers on file, besides numerous plans and specifications. The Librarian also reported that the members were making good use of the library. After the different reports had been read and adopted, the following gentlemen were elected officers for next year's general committee: President, J. A. Duff, B.A., (by acclamation); Vice-President, E. B. Merrill; Secretary-Treasurer, J. R. Deacon; Corresponding-Secretary, F. M. Bowman; Librarian, F. S. Russell; III year Councillor, J. R. Pedder; II year, M. Dunbar. A vote of thanks was passed to the retiring general committee for their services to the Society. Speeches were then made by different members on various questions affecting the well-being of the Society and the School. Among the speakers were; Messrs. L. M. Bowman and R. McDowell, (graduates) who expressed their pleasure at seeing the Society in such a flourishing condition. The meeting then adjourned until next October.

BRICK VS. PIPE SEWERS.

THE following letter from the City Engineer of Glasgow, Scotland, fully bears out the contention of this journal that the City Council of Toronto took a retrograde step in deciding that in future all sewers of 12 inches and upwards shall be constructed of brick:

Office of Public Works,
GLASGOW, 13th March, 1889.

"In reply to enquiries, I beg to say, the sewers in Glasgow which are built of brick are not less in diameter than 2 feet 6 inches. We use salt-glazed fire clay pipes for all sewers of smaller diameter. I would not think of using bricks for smaller sewers than the above, when fire clay pipes can be obtained, because, in the first place, the bricks would be very much more expensive, taking the material and labour also into consideration, and in the second place, they would not be nearly so satisfactory. The comparative roughness of the brick with their numerous jointings obstruct the sewage to a considerable extent, and cause a deposit which may become a fruitful source of disease. The smooth surface of the pipe allows the sewage to flow away, and a free flow of the sewage is of vital importance. Liquid sewage and sewage gas to a greater or less degree come through brick drains, if not specially well built, whereas the vitrified pipes are impervious to these. There is no doubt as to the durability of fire-clay pipes and they are not nearly so easily affected by the action of water and acids as brick sewers.

I may add, that, so far as I know fire clay pipes are recommended by all engineers in this country for sewers up to 18 inches diameter in preference to bricks."

JOHN CARRICK, M. I. C. E.,
City Architect and Master of Works, Glasgow."

To color bricks black, *La Semaine des Constructeurs* says, immerse them in a warm bath of linseed oil and asphalt.

The School of Practical Science, Toronto, shows a total attendance of 58 who are taking the civil engineering course.

Messrs. J. Stewart, A. Wright and others have purchased the plant of the Portland Cement Co., Winnipeg, and purpose engaging extensively in the manufacture of pottery and building material.

SANITATION AND HEALTH.

SANITATION IN SCHOOLS.

NOWHERE is there greater need for compliance with sanitary laws than in our public school buildings. Until quite recently, however, little attention was paid to the matter. In some communities, however, the value of sanitation in schools is being recognized. In the Hygienic Institute in Berlin a course of instructions is given to the school officers, covering the most important and practical principles in school hygiene. These instructions relate to the construction of school buildings, light, heat, ventilation, care of the school-room, construction of desks, disposal of waste, drinking water, infectious diseases, and kindred matters. These lectures are illustrated by the use of material collected in the Museum of Hygiene and by visits to the model schoolhouses of Berlin. Results have justified this course.

In the city of Boston the Committee on School Hygiene, observing the lack of proper sanitation and knowing its value, have, for the purpose of placing school buildings in the best possible sanitary condition, resolved the following: "That the Committee on Accounts be requested to instruct the janitor in each school that he shall keep all the windows and doors in his school open for five hours each day of the week just preceding the opening of the school year (in September), in order that the building may be thoroughly aired for the purpose of disinfection; also, that on one of the days mentioned (the last day preferred) the building shall be heated sufficiently to remove all dampness which may be present; also, that on the first of the days named the water shall be turned on in all the faucets on the premises which empty into receptacles communicating with drains or cess-pools, and allowed to flow long enough to insure the perfect working of the traps attached, from which the water may have evaporated during vacation time; also, that during the week mentioned the whole inside of each room shall be thoroughly brushed or rubbed down; that all the painted surfaces in the school shall be cleansed with a solution of corrosive sublimate (1 part to 500); that all the floors shall be mopped or wiped with a cloth moistened with the same solution; and that all the desks, furniture, and apparatus shall be cleaned, and, where possible, washed or rubbed with a disinfectant solution."

PUBLICATIONS.

WE are indebted to Prof Ware, of Columbia College, N Y., for a copy, in pamphlet form, of an instructive paper, of which he is the author, entitled "The Instruction in Architecture at the School of Mines." This paper was read recently before the Alumini Association of Columbia College.

We have received a pamphlet entitled "Rust on Construction of Sewers," containing the able paper on "Construction of Toronto Sewers," read before the Canadian Society of Civil Engineers, by Mr. C. H. Rust, of this city, together with the instructive discussion thereon by members of the Society.

The Toronto public library contains 20,000 works of reference. For the convenience of the users of this valuable collection, a handsomely printed and bound reference catalogue has just been published, for a copy of which we are indebted to Mr. Bain, the Librarian. This catalogue has been carefully arranged in the manner which will make it of the greatest service to seekers after special information, to whose thanks the librarian and assistant librarian are justly entitled.

We appreciate the kindness which prompted the publication of the following in a recent number of the *California Architect*: "Our friends across the line are determined not to be outdone, and so present a journal as well edited and illustrated as many of those in the United States. We heartily congratulate the editor on the greatly improved appearance of his journal." We desire further to express our pleasure at the signs of improvement and prosperity which mark the pages of our Western contemporary.

DECORATION AND FURNITURE.

CARVING.

By W. STIVENS HICKS.

AS a branch of sculpture—as the art of cutting a hard body by means of a sharp instrument, and as a term generally employed in speaking of figures and foliage cut out in ivory or wood in contradistinction to sculpture or figures cut upon metal or stone—the art of carving is of the greatest antiquity. It is frequently mentioned in the Bible. The prohibition in the Second Commandment against any graven image evidently refers to it. It was practised by all the civilized nations of antiquity, and most frequently, in aid of religious observances, images or emblems of diety being created by it both for public and private devotions. Even among the most uncivilized tribes who have any external religious rites, rude representations of this kind are common. In Catholic countries carved images of saints and relics are still used both for churches and for private devotion. Besides this almost universal use, carving was early employed for purposes of ornament. Many eastern nations have excelled in it. India and China have long been famed for their artistic skill both in wood and ivory, particularly the latter. The ancient Babylonians practised the art among other purposes in the carving of heads for staffs and signet rings. In the family of Abraham, who was a Chaldean, these ornaments appear according to some allusions to have been preserved. The pledges which Judah gave to Tamar include the shaft and the signet ring. Among the Greeks, statues of the gods carved in wood and overlaid, were common at an early period. At a later period plates of ivory were used for overlaying statues, and were also largely employed for smaller ornamental work. In the early and middle ages, wood carving became general for the decoration of Christian Churches and altars. One of the most ingenious and useful purposes to which carving has been converted in more modern times, is that of engraving wood cuts for printing. These have been applied to almost innumerable uses in manufactures as well as art. Some of these applications have given way to the art of engraving in metal and other processes, but new ones are continually arising. One of the latest developments of the art of carving is the invention of carving by machinery. A patent was taken out in 1829 by Mr. Joseph Gibbs, for the cutting of ornamental forms in low relief. These were executed with great accuracy, and were used in ornamenting the floors of Buckingham palace, London, England. A machine, the principle of which has not been made public, has since been used successfully by Mr. Cheverton, for obtaining miniature reductions of life sized statuary. A machine patented in 1845 by Mr. Jorday, is caduced, so far as that is possible, by revolving tools; the finish is afterwards given to carvers to finish by hand labor. This machine was used for the carving decorations of the interior of the Houses of Parliament, England.

The spring exhibition of paintings, water-color drawings statuary, architectural designs, stained glass, etc., held under the auspices of the Montreal Art Association is now in progress.

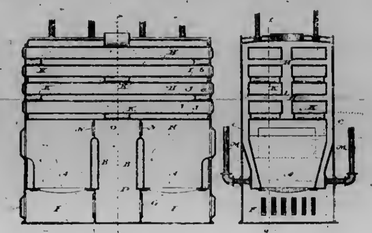
A lovely parlor in light hues, on a ground scale, is arranged as follows: The floor is inlaid in oak and natural cherry, and the walls have the palest tint of pink watered-silk paper, with a frieze of roses on a pale-blue ground, and cornice of pink, blue, and gold. The ceiling is in cream-color with gold stars sprinkled over it and a square panel of roses in the centre. The slender crystal and gold chandelier has pink candles.

We are indebted to the municipal authorities of Kansas City, Mo., for a copy of the annual report of Mr. W. B. Everhart, Superintendent of Buildings, of that city. In addition to the number, value, etc., of new buildings erected during the year 1888, the report contains statistics showing the volume of business done during the year, some of the engravings of principal buildings, and other interesting and valuable matter.

MANUFACTURES AND MATERIALS.

Sectional Water-Heater.

Richard Bigley, Toronto, Canada, patented in Canada, Feb. 1889.



Claim.—1. A hot-water heater composed of a series of sections, preferably rectangular in shape, and having smoke-flues formed between the plates of the sections, and a water-space between each section, the said water-spaces being connected together by vertical passage-ways arranged substantially as and for the purpose specified.

2. A hot-water heater composed of a series of sections, preferably rectangular in shape, and having longitudinal smoke-flues formed between the plates of the sections, and a water-space formed between each section, the said water-spaces being connected together by suitable passage-ways arranged as herein described and extending from a point near the grate to the crown of the said heater, substantially as and for the purpose specified.

3. A hot-water heater composed of a series of sections, preferably rectangular in shape, and having smoke flues formed between the plates of the sections, and a water-space between each section, connected together by suitable vertical passage-ways, in combination with a fire-box located at each end of the heater and connected with the smoke-flues passing through the sections, substantially as and for the purpose specified.

4. A hot-water heater composed of a series of sections, preferably rectangular in shape, and having smoke-flues formed between the plates of the sections, and a water-space formed between each section, the said water-spaces being connected together by suitable vertical passage-ways, in combination with two fire-boxes located at each end of the heater, the said fire-boxes being separated by an air space through which the smoke and heated gases pass from the fire-boxes on their way to the smoke-flues, arranged, as described, in the sections of the heater.

5. A hot-water heater having two fire-boxes separated by an air-space extending to a point where the smoke and heated gases pass into the flues arranged in the heater, combined with the adjustable dampers arranged above the water-backs of each fire-box, substantially as and for the purpose specified.

6. A hot-water heater composed of a series of sections, preferably rectangular in shape, and having smoke-flues formed between the plates of the sections, and a water-space formed between each section, the said water-spaces being connected together by suitable vertical passage-ways extending from a point near the grate to the crown of the fire-box, in combination with two fire-boxes separated by an air-space extending upwardly from the bottom of the ash-pit, from which it is separated by adjustable dampers arranged substantially as and for the purpose specified.

7. A hot-water heater composed of a series of sections having smoke-flues formed in each section and connecting with each other, the said sections being joined together, so as to form the water-space between each section, substantially as and for the purpose specified.

Mr. R. Hill, of Toronto, will shortly open and operate a new stone quarry at Longford Mills, Ont.

Mr. Henry Black, Woodstock, N. B., has just patented a method of adapting materials for interior cornices.

The Dominion Sanitary Pottery Company, St. Johns, Que., have commenced operation in their second pottery.

Messrs. Alonzo Langlais and A Ramsey & Son, Montreal, have been ranted a patent for a glass bevelling machine.

The Ormstown Brick and Terra Cotta Company have undertaken to supply Montreal contractors with three million bricks.

The Stellarton (N.B.) Brick and Tile Company propose increasing the size of their works and their manufacturing capacity.

Messrs. Stahlschmidt & Co., of Preston, are supplying the office furniture for the New York Life Insurance Company's new building in Montreal.

Mr. E. Bowler, of St. Johns, P. Q., has entered into partnership with Mr. W. B. Malcolm, of Toronto, for the manufacture of sanitary ware at St. Johns, under the name of the Dominion Sanitary Pottery.

The Globe Furniture Company, of Northville, Mich., has purchased the business of the Bennett Furnishing Company, at London, Ont. The City Council has granted the new Company exemption from taxation for ten years on condition that they give steady employment to thirty men.

DEATH OF MR. LIONEL YORKE.

AS we go to press, we learn with deep regret of the sudden death of Mr. Lionel Yorke, the well-known contractor, which took place on Saturday night, the 13th inst. Mr. Yorke was taken ill on returning from a visit of inspection to his stone quarries at the Forks of the Credit, and survived but a short time after reaching home. A *post mortem* examination revealed the cause of death to be fatty degeneration of the heart. During the twenty years of his residence in Toronto, Mr. Yorke erected some of the most important buildings in that city. As is well known, he was at the time of his untimely death, engaged on the construction of the new Parliament Buildings Deceased was a native of England, and was fifty-five years of age. He was known as a man of sterling integrity and large sympathies.

CONTRACTS

CONTRACTS AWARDED.

The contract for the Collingwood Marine and General Hospital has been let to Messrs. Bryan Bros.

The contract for building a large summer hotel at Union Park, has been let to S. Armour of Brockville, Ont.

Messrs. Longdon & May, of Ingersoll, Ont., have secured the contract for the brick work of a new three-storey block for Mr. C. S. Graves, in Tilsonburg.

The building committee of the new Methodist Church at Woodstock, Ont., have accepted the plans prepared by Messes. Cuthbertson & Fowler, of that town.

Messrs. Walters & McNeely have received the contract for the building of the iron bridge from Belleville across the bay of Quinte to Prince Edward County. The cost will be about $100,000.

CONTRACTS OPEN.

ACTON, ONT.—A new manse for Knox church is to be erected.

OWEN SOUND ONT.—The site has been selected for a new public school.

KINGSTON, ONT.—The city is agitating the question of the erection of a new drill hall.

VANCOUVER, B. C.—$5,625 have been subscribed towards the new Y. M. C. A. buildings.

LUCAN, ONT.—The citizens will be asked to vote money for the erection of a high school.

LONDON, ONT.—The erection of an additional story to the jail building in this city is contemplated.

SAULT STE. MARIE.—The Ontario Government has granted $1,000 towards a High School here.

BERLIN ONT.—A new piano factory is to be built here.—Messrs. Nelson & Forsyth will enlarge their foundry.

BROCKVILLE, ONT.—A by-law has been passed authorizing the expenditure of $100,000 for drainage purposes.

ST. THOMAS, ONT.—Improvements to cost from $10,000 to $12,000, are to be made to the Dake House hotel in this city.

MONTREAL, QUE.—The citizens have appointed a committee to secure the erection and endowment of a medical college for women.

WINNIPEG, MAN.—A large five storey hotel costing $200,000 is to be erected this year.—A Club House to cost $12,000 will be erected for the St. George Snow Shoe Club.

PETERBOROUGH, ONT.—The Ashburnham Town Council will erect a Town Hall, at a cost of $3,000. By-laws will be submitted asking $10,000 for a public school and $20,000 for a Collegiate Institute building.

TORONTO, ONT.—The Public School Board estimates will contain $307,700 for new buildings and improvements.—The construction of a bridge at the head of Sherbourne St., at a cost of $100,000. has been recommended by the Board of Works.—The following building permits have been issued from the office of the City Commissioner during the last month: Chas. W. Abrey, detached 2 storey and attic brick residence, Bernard ave., east side of Bedford road, cost $2,700; J. Rowland, alterations and additions to store 334 Yonge st., cost $1,700; H. Lewis, four attached 2 story and attic brick and rough cast dwellings, Duke st., near Ontario st., cost $4,500; Dr. A. R. Abbott, two 3 story brick stores and alterations, Terauley st., $5,600; Dr. L. B. Pollard, alterations and additions, corner Shuter and Dalhousie streets, cost $1,200; Callaghan & O'Leary, mansard roof to hotel, Queen and Jarvis streets, cost $1,200; J. E. Thompson & Co., four brick stores and music hall, King street, cost $50,000; Richard Tinning, 2-story and attic brick dwelling, Murray st., cost $5,000; Mr. Crane pair 3-story brick stores, Spadina ave. and Oxford streets, cost $7,000; Brady & Ball, pair 1-story and mansard rough cast dwellings, Elm st., cost $1,600; Mr. Shepherd, eight attached 1-story and mansard rough cast dwellings, Spadina Place, cost $5,600; C. Evans, pair and one detached 2-story and attic brick dwellings, Markham st., cost $6,000; I. Wardell, alterations to stores and erection of hall in rear, Spadina ave., cost $4,000; Thos. Wilkins, 2-story and attic brick dwelling, Suffolk Place, cost $3,500; Wm. Bailey, detached 2-story and attic brick dwelling, Classic Ave., cost $2,500; W. S. Lee, six 3-story attached stores, east side Spadina ave., cost $16,000, and pair 2-story and attic brick dwellings, Sullivan st., cost $6,500; Jas. Lumbers, pair semi-detached 2-story and attic brick dwellings, Sherbourne st., cost $6,500; Mark Hall, 2-story brick addition and alterations, 239 and 241 Sherbourne st., cost $4,000; Jas. Leighton, pair semi-detached 2-story and attic brick dwellings, Sussex Ave., cost $6,000; J. M. Pugsley, 2-story and attic brick dwelling, 127 Bloor st. west, cost $10,000; R. Armstrong, ten attached 2-story and attic brick dwellings, Church and Wellesley streets, cost $30,000; Davis & Henderson, 4-story brick warehouse and bindery, 84 Bay st., cost $20,000; Henry Lucas, 2-story and attic detached dwelling, Concord ave, and College st., cost $3,000; Robert Heath, three story brick stores, College st., cost $6,000; James Coucher, boat house, foot of Brock st., cost $1,200; Jas. Hewlett, five attached 3-story brick stores, 242 Carlton st., cost $11,500; C. Dempsey, pair semi-detached 2-story and attic brick dwellings, cost $6,000; R. McRae, 4-story brick warehouse, Colborne st., cost $10,000; T. R. Earl, two pairs semi-detached 2-story and attic brick dwellings, Markham st., north of College, cost $16,000; Public School Board, 2-story brick school, Grace St., cost $16,000, and 2-story brick school, Muter st., cost $16,000; S. Rogers, 3-story brick warehouse, Princess St., $3,000; H. F. Swalam, pair semi-detached 2-storey and attic brick dwellings, 503 Sherbourne st., cost $4,500.—The citizens on the 9th inst. sanctioned a by-law for the expenditure of upwards of half a million dollars for water works extension. Tenders for a portion of the work and supplies will be asked shortly. Particulars may be had from Secretary Water Works Department

CANADIAN ARCHITECT AND BUILDER

FINE AND INDUSTRIAL ARTS · DECORATION · FURNISHING
CONSTRUCTION · SANITATION · ENGINEERING

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SUBSCRIPTIONS.

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In ordering change of address give the old as well as the new address. Failure to receive the paper promptly should be reported to this office.

ADVERTISEMENTS.

Prices for advertising sent promptly on application. Orders for advertising should reach the office of publication not later than the 12th day of the month, and changes of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The Ontario Association of Architects has appointed the "Canadian Architect and Builder" its official paper.

AS we go to press we learn that the Committee having in hand the competition for the proposed new Public Library Building in Hamilton, have made certain concessions in terms in deference to the wishes of the architects.

WE understand that the completion of the late Mr. Lionel Yorke's contract in connection with the erection of the new Parliament Buildings in Toronto will be assumed by Messrs. Carrol, Gaylord & Vick, of Toronto.

WE find the demands of advertisers upon our space so great, that in justice to our readers we have been compelled to add four pages to the size of the present number. We have still abundance of room for enlargement, and therefore continue to invite contributions to both our reading and advertising pages.

THE value of industrial exhibitions as a means of education for mechanics, has so impressed itself on English people, that in London, Manchester and other cities, money is being publicly subscribed for the purpose of sending representative bodies of workingmen to the Paris exhibition. The American labor organizations are being advised to follow English example.

THE authorities of the American Association for the Advancement of Science will convene in the city of Toronto, on the 27th August next, to remain in session one week. This gathering of probably a thousand prominent scientific men will prove an interesting event for all who desire the diffusion of systematized knowledge, and its outcome cannot fail to be of benefit to the whole province. The discussion of scientific subjects, the interchange of experience, and the application of its results, must stimulate the material as well as the intellectual progress of the country.

THE Toronto City Council seeks to save the expense of an additional inspector of plumbing by transferring part of the duties of the present inspectors to the drain inspectors. This is at best but a temporary expedient. There was ample work for an additional plumbing inspector before the annexation of Parkdale to the city. With the recent addition of seven or eight thousand to the city's population, and the consequent extension of area, it is idle to hope that the inspection provided for under the Plumbing By-law, can be efficiently performed by two inspectors. The public health is so largely dependent upon the condition of the plumbing in city houses, that no attempt should be made to economize at the expense of the efficiency of the inspection service. We trust that the Toronto City Council will see the wisdom as well as the necessity of appointing at least one additional inspector of plumbing.

THE vote of the people on the 18th inst., will decide whether or not the erection of the new Toronto Municipal Buildings shall be proceeded with in accordance with the architect's design. We repeat what we have before stated on this subject. The city is sadly in need of a new city hall and court house. The present and future importance of the city demands that the buildings erected for the purpose should not be of the cheap and shabby variety, but of a durable and beautiful character. The County of York can compel the city to erect a new Court House, and great advantages may be obtained by erecting a combined building. The site has been purchased and considerable money expended in bringing the scheme to its present position. The only thing now lacking is the additional $600,000 necessary to complete the buildings. We trust the people will vote the money, and that the undertaking will go on to successful completion without further delay.

WE are pleased to observe the liberality of the Toronto City Council in the direction of increasing the park area of the city, as well as improving the present parks. A respectable appropriation appears in the present year's estimates for this object. What Toronto in company with every large city requires, is a number of small parks scattered throughout the thickly populated districts. Toronto is very deficient in respects of such parks, and steps have been taken none too soon to provide them. The proposal to purchase the Knox College property, remove the building and utilize the site as a park, is one which we hope to see carried out. The Presbyterian authorities admit that the present college building and grounds are too small, and that it would be well to sell the property and rebuild elsewhere. It is apparent to every observant mind that Toronto is destined to be a city of great magnitude. It therefore becomes those who compose the municipal Government to take a comprehensive view of the future, and make wise provision for its requirements.

WE have frequently regarded with curiosity a house recently erected on one of the leading avenues of the city of Toronto, the total width of which we should judge does not exceed ten feet. If the value of real estate in Toronto, so early in its history, prompts the erection of such a narrow structure, there is good reason to fear that we shall ultimately reach a standard of economy equal to that of a wealthy New York contractor who, having a piece of land 120 feet in depth and only five feet in width, which he found impossible to sell, erected upon it a dwelling for himself. The actual width of the building is said to be four feet. It is described as being built of brick, four stories high. The sills and lintels are of white marble, and three bay windows run up from the first floor to the roof. Small, round windows, like port-holes, let light into the basement, and the doors are mere slits in the brick walls. Few, we fancy, will feel inclined to envy the dwellers in houses of such strikingly modern design.

WE have reason for believing that the advantages of organization are becoming more widely understood amongst builders and contractors of the better class throughout Ontario. The number of letters which have lately appeared in this journal in favor of the formation of a Provincial Association of Builders and Contractors, is alone sufficient indication of the feeling on the subject, and should warrant the taking of some definite steps to bring about the desired end. It is quite natural that those interested in the matter should look to the builders and contractors of Toronto to take the initiatory steps towards organization. So far, we regret to say, more interest appears to have been taken in the movement outside than in Toronto. We are aware, however, that a number of Toronto master builders are becoming more and more impressed with the need of such an Association, and we look for the introduction of the question to the Toronto Builders' Exchange at an early day. Meanwhile, we continue to invite expressions of opinion from our readers, in order that the subject may be as thoroughly ventilated as possible before action comes to be taken.

WE have ceased to wonder at the numerous failures amongst master builders since we learned how slipshod and unbusinesslike are the methods of estimating practised by many of them. So long as such methods are followed, success must be the exception rather than the rule. We know of instances in which the tenders on a contract varied as much as fifty per cent. The recklessness or want of knowledge which such a condition of things reveals is sufficient to account, not only for the frequent failures of incompetent contractors, but also for the difficulty which the honest, competent builder experiences in making anything like a decent profit on his work. We feel inclined to agree with one of our subscribers who, writing on this subject, expresses his belief that the failure of so many contractors to estimate correctly is due, in a majority of cases, to lack of arithmetical knowledge, care and time expended in exact calculation of details, and the use of systematic methods of arriving at conclusions. Realizing that the possession and application of such knowledge would save many contractors from engaging in ruinous undertakings, we have arranged with one of our contributors, whose experience as a builder and contractor entitles him to speak authoritatively on the subject, to write a series of articles on "How to Estimate." The first of these articles will be found printed in the CANADIAN ARCHITECT AND BUILDER for June, and will repay careful perusal.

THE astonishing improvement in the character of public buildings and private dwellings in Canadian cities during the last decade has on previous occasions formed the subject of comment in this journal. This improvement is due in a large measure to the use of more beautiful and costly finishing materials. In no class of material is improvement more noticeable than in hardware. There is at present sold in this country each year a very considerable quantity of the finer class of bronze hardware, and the demand is growing rapidly. There are two reasons for this. One is the accumulation of wealth in the country, and the other, the cheapness of production which has recently been attained in the manufacture of fine hardware. By the use of improved machinery and appliances, it is now possible to sell fine bronze goods at a price little above what our forefathers had to pay for an article which, however useful, could certainly not be called ornamental. Thus far, all the finer kinds of hardware used in Canada, have been imported from the United States. We believe the time has arrived, however, when some of our Canadian hardware manufacturers might profitably turn their attention to the production of these goods. While their manufacture requires a large outlay for expensive machinery, and American manufacturers with a much wider market have been enabled to reduce the cost of manufacture to a minimum, these advantages would be offset by the protection of 35 per cent. afforded by the tariff to the Canadian manufacturer. Who will be the first to try the experiment of manufacturing a fine class of building hardware in Canada?

THE position of the retail lumber dealer in Toronto, if we have been correctly informed, is not an enviable one. The wholesale dealer is said to have been steadily encroaching upon the field of the retailer, until at last the latter finds in the former a direct competitor. Until recently the wholesale dealer would refuse to sell a less quantity than a car load of one kind of lumber. Now, we are informed, wholesale dealers will sell to a contractor as little as a wagon load. Some who make a pretence of selling nothing less than a car load will nevertheless mix in the car load as many varieties of lumber as the purchaser may desire and in the required quantities, which is equivalent to selling in retail quantities. Thus the dividing line between wholesaler and retailer, once broad and distinct, has become well-nigh obliterated, while the fierce competition for possession of the retail trade has resulted in seriously decreasing the profits of both classes. This matter is one which indirectly affects injuriously the interests of the *bona fide* contractor. The eagerness of the retail lumber dealers to hold their trade as against the wholesalers, has induced them to extend credit to persons styling themselves builders and contractors, but who are without experience or capital. Such persons, being as we have said without experience, and having nothing to lose, take contracts at prices which result in failure to themselves and a general lowering of the standards for work to an extent which leaves no profit in the business for the contractor who seeks to perform his work in a thorough and workmanlike manner. If there was a Provincial Association of Builders and Contractors, it might, by agreeing to purchase only from *bona fide* retail dealers, improve the position of such dealers, and compel them to cease selling on credit to incompetent and irresponsible parties.

A RECENT case before the Toronto Courts has led to strict enquiry on the part of the city authorities into the character of work and material in connection with the block paving of the streets. It has been found that both work and material are below the standard called for by the specifications. The contractors admit this, but in extenuation say that first-growth cedar, perfectly sound and free from pin-holes, such as the specifications demand, cannot be obtained in sufficient quantity. The correctness or otherwise of this plea is at present the subject of many newspaper articles. By some it is asserted that cedar of the quality required can be procured in abundance on Manitoulin Island, but Mr. J. C. Bailey, a civil engineer of large experience, denies that such is the case. Mr. Bailey concludes a letter on the subject by saying: "The whole trouble seems to me to be caused in allowing wooden block pavement of any kind to be used in cities. It is of such perishable material, hence expensive on account of frequent renewals, also unhealthy. Stone is altogether the best for large cities, and we have lots of first-class material within easy distance and access for this purpose. We have the traps—gneiss and granite near Gravenhurst; again the same just east of Peterboro on the Ontario & Quebec Railway. Stone may be noisy, but it is more lasting, healthier and cheaper in the end." We have more than once during the past year expressed the hope that something more lasting than cedar would soon be adopted for paving the business thoroughfares of Toronto. It is hoped the public interest which has been excited in the subject will hasten the adoption of more substantial material. We cannot agree with Mr. Bailey in the belief that stone should be used on residential streets. Where the importance of the street will warrant it, asphalt should be used, while on streets of lesser importance, where there is no heavy traffic, cedar blocks give very good satisfaction.

THERE are indications that the present year will witness a larger number of costly buildings under construction in Canada than ever before. In Montreal, work will shortly commence on the new Victoria Hospital, the cost of which will probably exceed a million dollars; a house for Mr. McIntyre which it is estimated will cost half a million dollars: the new Y. M. C. A. building, and several other notable structures. In Toronto, in addition to the new Parliament Buildings, there will be the new Board of Trade Building, cost $300,000; Victoria University, cost $200,000; a seven story office building on the site of the Molson's Bank, to cost $150,000; Upper Canada College, cost $120,000; a building for the Traders' Bank, cost $100,000; Freehold Loan and Savings Co. building, cost $150,000; Confederation Life Association building, cost $300,000. In Hamilton, the Bank of Hamilton will erect a costly new building, and the Y. M. C. A. and Public Library Board will each put up structures costing upwards of $20,000. The erection of so many costly structures will not only keep the architects busy, but also afford opportunity for the display of the best talent. We print elsewhere an advertisement of the manager of the Confederation Life Association asking for competitive designs for the proposed new buildings. We are pleased to observe that it is proposed to give the superintendence of the building into the hands of the architect who shall be adjudged the winner of the competition. The money prizes offered to the authors of second and third best designs may also be considered satisfactory. No mention is made, however, in the advertisement of the intention to obtain expert advice in deciding the merits of the designs offered. This will be necessary in order to induce our ablest architects to enter the competition. We are pleased to be informed that the management of the Confederation Life Association are desirous that this competition should be amongst Canadian architects only, and that the work should be carried out by a Canadian. We wish to point out, however, that should the work be given to a Canadian architect, it will not be possible to make a fair comparison of the ability displayed in his work, with that of the foreign architect who is at present engaged in putting up a building for a rival company. The Canadian architect will be required to erect a building nearly three times the size of the one now under construction, with not more than two-thirds of the money which is being expended on the latter. This will forbid the use by the Canadian architect of the imported stone and other costly materials which are a leading feature in the other building. Canadian architects would be glad of an opportunity, given a fair field and no favor, to demonstrate their ability to do work equal if not superior in quality to that which some of our people believe can only be obtained at the hands of foreigners.

IT has been said that competition is the life of trade. Such may be the case, but it is equally true that competition is the death of honorable dealing as between man and man. Who has not been made aware of the mean, contemptible tricks which are resorted to by men desirous of defeating their competitors? It is not limited to one industry, trade or profession, but permeates all of them, until the honest man is almost discouraged, and inclined to become a rogue like the majority. A man of average abilities has no chance to make an honorable living in these days of commissions for doing this and the other service. A man of superior ability may be able to succeed, notwithstanding the unfair competition to which he is subjected by the dishonorable men with whom he comes in contact. The architect who charges the regular professional rates and does not receive other remuneration, does not compete on an equal basis with the man who will undertake work at 2 per cent. on whatever he can get, and more than makes up the difference by levying on the contractors. What the client looks at is the amount he pays his architect, which, if he is building a $10,000 house, would be (if he has engaged the services of an honest and competent man) $500. When another man offers to do, so far as he knows, the same work for $200, he imagines he has saved $300, when in fact he will lose that amount once, if not many times over. The $200 man will not give him more than $200 worth of work, even though he may do all the work necessary to the erection of his house. The plan and elevations will not receive the study that would be given to them by a conscientious man, nor will there be very much attention given to the details. The main object of the 2 per cent. man is to get the house finished and receive his money. But beyond the inferiority of the work done, there is almost the certainty that the architect will make good the deficiency in his remuneration, by accepting commissions from the contractors and those supplying materials.

It is one thing to give a commission to a man in payment for selling goods, but it is a very different thing to give a commission to a man who is buying goods for his employers. It simply means that if he does not favor the seller's interest he gets no commission, and if he receives a commission, he sacrifices his employer, who is paying him for looking after his interests. An architect who receives from a contractor or material dealer any sum of money or its equivalent, is in the power of the person from whom he has accepted such value. It should not be difficult to determine whose interests will suffer under such circumstances. Another practice which should be condemned is when architects share their commission with those who obtain them employment. This on the face of it may not appear a very serious matter, but it usually results in the architects who give such commissions accepting an equivalent whenever the opportunity offers. This form of gaining work has in many instances been carried to such an extent that it is asserted that companies are formed with the ostentatious object on the part of the promoters of securing work for an architect or firm of architects, the company or association receiving a definite share of all commissions. Such organizations are ruinous to men, no matter how talented they may be, if they are not prepared to share the result of their hard work with these parasites, who subsist by living on the abilities of others and their own stupendous effrontery. It may be taken for granted that the architect who will not work for less than his proper remuneration, is one who will serve his clients first and always. It would not be just to say that all who accept less than 5 per cent. are dishonest, but it can be safely said that nearly all the dishonest men are among that number.

ON ESTIMATING.

I HAVE found in my own practice, says D. W. King, in *Building*, ordinary country cottages of wood will cost from $2 to $5 per square foot of plan. Country cottages of the better class, from $5 to $10. Brick dwellings in blocks, from $10 to $20, and so on. This method of estimating was adopted by a celebrated French architect, Mons. Leonfouchre, who became so expert that he was able to estimate quite as accurately as the builders, and in consequence won a large patronage, especially in the designing of domestic buildings. It was his custom to keep a record of every building erected, with small sketch of the ground plan and a brief description of the materials, finish, etc. The best way is to keep a record of the cost of every building, giving the results by both the cubical contents and square feet of plan.

Small buildings of the same description are more expensive than the large ones, as the preliminary preparations, cartage, scaffolding, loss of time, etc., are about the same in each case, while the cost of materials in large quantities is much less, all of which must be considered.

The mason work, rough carpenter work, and roofing are the chief items of expense in factories, barns, sheds, outbuildings, etc.; the interior finish and decorative work in dwellings and other highly finished structures.

The Ontario Rolling Mill Company are making preparations to commence the manufacture of cut nails.

OUR ILLUSTRATIONS.

PHOTOGRAVURE PLATE—NEW DEPARTMENTAL BUILDINGS, OTTAWA, ONT.—THOS. FULLER, R.C.A., ARCHITECT, PUBLIC WORKS DEPARTMENT, OTTAWA.

SKETCH FOR CITY FRONT—WM. MCCANDLISH RADFORD, MONTREAL.

SKETCH FOR "GLEN TOWER," ROSEDALE, TORONTO.—R. W. GAMBIER-BOUSFIELD, ARCHITECT, TORONTO.

QUERIES AND ANSWERS.

(No. 5.)—Is it better to have ventilating shafts run from the ceiling, or the floor line of a room? I insert the following extract from Wightwick's "Hints to Young Architects," as bearing on the subject, and should like to find out the true method: "The extraction of foul air at the floor level, is objectionable and unsound in principle; as it is a law of Physics that a gas expands, and ascends when heated, the colder strata of air taking its place, therefore a system which follows this natural order is the best, and the ceiling level is for this reason, the place for the exit of vitiated air. The Carbonic Acid Gas, mixed with the air does not by its greater weight, separate and fall to the lower level, as imagined by many writers, but tends by the law of diffusion of gases, to diffuse itself throughout the room." Thinking that perhaps this may interest some others of your readers, besides myself, I hope to see an answer in your next issue.

A BROCKVILLE STUDENT.

THE VICTORIA HOSPITAL, MONTREAL.

MR. MAXON SNELL, architect of the new Victoria Hospital, Montreal, is at present in Canada, and in a recent interview is reported to have said: "I have had more difficulty in designing the plan for this hospital than any other I ever built. This is accounted for by the peculiarity of the Canadian climate, its intense heat and cold. For instance, hospital buildings in the south of France would in nowise do here. There they are built upon the hut plan, and of course that is the proper plan for all hospitals. But were that plan followed here, it would cost a fortune every winter for fuel alone; for in that system the hospital is scattered over a large tract of land and is only one storey high, and consists of a number of separate buildings. So it will be seen how difficult it would be to build such an hospital as that in Montreal, as each building has to have a separate heating apparatus. It is always difficult to prevent foul air from reaching the upper storeys in hospitals not built on the hut plan, as it always travels by the stairway. I have taken means in my plan of the present hospital to prevent this, by detaching the stair case, and putting on each floor short bridges, so that there will be no staircase for it to ascend. I intend to press for the erection of one or two detached buildings for the purely infectious cases. This of course will be costly, but I consider it worth the expense. When completed there will not be another hospital in the world built on the same design as the Victoria."

EDITOR CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—In the issue of the *Metal Worker* of March 23rd, is shown a set of plans and specifications for a system of hot water heating and ventilation by Richard Swallwell, of Winnipeg, Manitoba. This gentleman was awarded the first prize in the competition offered by that enterprising journal, which deserves the highest praise for its endeavors to advance the science of warming and ventilating.

Now, while I give Mr. Swallwell credit for his perseverence in preparing plans and specifications, and for having obtained first place in the competition, I must object to that part of his essay, where, in describing his system of indirect heating and ventilation, he says: "The idea is original." I claim that it is an exact copy of plans prepared by me, and fitted up in a residence at Calgary, N. W. T., last year. These plans and specifications were forwarded to Winnipeg, and two or more hot water engineers were invited to estimate on the work, and presumably this is where Mr. Swallwell obtained his "original ideas." There is no difference in the plans as shown in the *Metal Worker* and those the writer made a year and a half ago, but the specifications may, in the construction of the heating chamber. Where the writer specified that it should be built of brick and lime with bright tin, Mr. Swallwell has constructed of wood and plaster, and takes occasion to say it is better than brick. Perhaps he thinks he scored a point against me in this simple alteration. The only other change is, that I show a damper to control the inflow of cold air to the heating chamber, in the same way as one for the smoke pipe and boiler draft.

Before attempting to reply to the *Metal Worker* in this matter, I have communicated with the proprietor of the house at Calgary for information as to the success of the system, and am to day in receipt of a letter from that gentleman, in which he speaks in the highest terms of the system after having had it in use all winter. H also says: "The Winnipeg men had never done such work before and were very skeptical as to its utility. And yet in the face of this, Mr. Swallwell tells us that it has been his practice to adopt this system.

This is another case in competitions where honor does not always fall where honor is due.

Yours truly,
W. J. BURROUGHES,
315 Queen street west, Toronto.

ONTARIO ASSOCIATION OF ARCHITECTS.

A MEETING of the Board of Directors of the Ontario Association of Architects has been called for the 19th of June, to discuss and arrange for the first annual meeting. It is proposed to have a number of papers on professional subjects read at the meeting, and the Derectors intend to make the necessary arrangements in June. It would be of great assistance to the Board if each member of the Association would send in to the Secretary the name of any subject which they would like to have discussed at the annual meeting. The Board of Directors would also like to receive offers to prepare and read papers on matters of general interest to the profession. Every member can render assistance, be it much or little, and they certainly should do so. If they do not wish to prepare a paper, they can at least suggest the subject matter for one, and thus insure that the papers will all be on matters of common interest. The Board of Directors would also like to receive suggestions from the individual members as to any matter that should receive their attention.

TORONTO ARCHITECTURAL GUILD.

THE meetings of the Architectural Guild of Toronto, have taken place regularly every month and have been very well attended. The interest of the members in the meetings is very great, and shows a continual growth. Now that the Ontario Association of Architects has been formed, the Guild can safely allow that Association to take charge of matters which it before was in duty bound to assume. The Guild, after paying all the expenses of the movement to establish the Ontario Association, has a large surplus which it hopes to use in the improvement of architectural design, etc. The membership is now twenty-six, but it is to be regretted that some four or five of them are what might be called "sleeping members."

At the last meeting new rules were adopted to govern the election of new members which it is hoped will prove satisfactory in all respects.

A committee of the Guild has under consideration the cause of the too prevalent efflorescence on brick work. An interesting report is expected, stating what are the local causes, and making suggestions for its amelioration, if not prevention. The committee was empowered to obtain such expert assistance as it might consider advisable.

The meetings during the warmer months will be held in the afternoon at the different summer resorts in or about the city. Those meetings which were held at Lorne Park and Long Branch last summer, were so much enjoyed by the members, that there is no doubt but that there will be a very full attendance this season.

NOTES ON ARCHITECTURAL MATTERS.

HAMILTON, May 7th, 1889.

EDITOR CANADIAN ARCHITECT AND BUILDER.

IN commenting on the design which appeared in your number for March, no reflection was intended on the other designs, one of which you have now published in your April number. I may be permitted to say that the plans of Messrs. Darling & Curry show an amount of study which entitles their authors to much credit. I can see that Prof. Ware must have had doubts which was best in plan. The one he favored was in accordance with American requirements, (hence his decision) and would have biased him on that account. There is a difference in American and British planning. Messrs. Darling & Curry's plans are good, and more consistent with our British ideas, and I think would have suited the members of the Board of Trade better, and as a paying concern, would have been found in all respects more to their interest. The design as shown in the perspective is good, but "rather stilty." I think the point of view is too far extended, and in this respect the same fault is to be found as in the other design which appeared in your March number.

I commend your remarks anent the destruction and loss of life in the Hartford Hotel explosion, and the necessity that all persons who have the management of steam engines, boilers, etc., should be compelled to undergo a proper examination and not be permitted to be so employed unless they can produce a proper certificate of their competency. Very long practical experience teaches me that hot water is the best, easiest managed, and least costly, requiring little or no repairs for an indefinite number of years, being noiseless, if the work is properly fixed, and applicable to banks, insurance offices, Boards of Trade, hotels, and buildings where quiet and comfort are desirable.

I was fortunate in being present at the gathering of architects at the Queen's Hotel, Toronto, on the 21st April and afterwards at the banquet given by the Toronto Guild of Architects. I proposed a resolution anent the admission of students into the Association, at the general meeting which I regret met with no seconder. Seeing that it is from the younger members that the architects of the future must be drawn, I think it will be found that the refusal to provide for the admission into the Ontario Association of Architects, of students, will result in another society being formed. I recollect that it was the exclusiveness of the Royal Institute of British Architects that caused the foundation of the "Association of Architects" in Lincoln Inn, an organization which has produced much talent, and to whose premier members the R. I. B. A. are glad to offer honors to secure their attachment. My contention is that by extending the privilege of membership in the Ontario Association of Architects to the young men, we should exhibit less jealousy and more love for our noble profession, besides securing for the Association a better revenue. I would suggest that the younger members should be admitted at a less fee than older members who are in practice. These younger men, when once started in practice, should pay full fees. I have no doubt that experience will induce this to be one.

Now permit me to urge upon the elected Directors to go to work with a vim, and we will have an Association that will be an honor to those who took part in gathering together the disunited craft, and which will eventually receive proper recognition at the hands of the other professions.

F. J. RASTRICK.

BOARD OF TRADE BUILDING COMPETITION.

EDITOR CANADIAN ARCHITECT AND BUILDER.

MONTREAL, April 11th, 1889.

DEAR SIR, Would you please publish the following correspondence in your valuable paper? Not having yet received a reply from the Board, I consider that the whole matter ought to be made public.

What I state is correct, and the plans of Messrs. James & James have therefore no claim to be accepted, without doing an injustice to the other competitors who kept within the carefully prepared and well considered conditions by Professor Ware.

Yours faithfully,
JAMES R. RHIND.

MONTREAL, Feb. 27th, 1889.

Edgar A. Wills, Secretary of Board of Traile, Toronto.

DEAR SIR,—I see the plan and design accepted for the Board of Trade building illustrated in the CANADIAN ARCHITECT AND BUILDER, and find that it does not comply with your instructions to architects, and ought not on that account to be even placed on the list of three, much less to be the design adopted.

The reading room is about 115 square feet less than the size given in the instructions. The space occupied by the rooms for the secretary, clerks, grain inspector and Board room is at the very outside not more than 982 square feet, instead of 1,220 square feet. The room for telephone is about 80 square feet and carried up two stories, where one is sufficient—in all 160 square feet, where 25 or 30 square feet is ample. There are 275 square feet lost at the external corner, the most important and valuable part of the building, and this space on six stories is equal to 1,650 square feet. A bank is no doubt very desirable in such a building, but there is no mention in the instructions for such a room to be provided. The entrances to the bank and the offices are the same, and on a busy day of the Board, these entrances would be uncomfortably crowded by those doing business in the bank, the offices and the Board. A separate entrance to the bank would therefore be an advantage. No windows are shown in the perspective, lighting the janitor's rooms. The parapet in front of the sloping roof is not desirable for the climate of Canada, and a sloping roof without a parapet would be dangerous in a street building, because of the large quantities of ice and snow that would fall from it. A flat roof is therefore the correct form for a street building in this climate. The corridors are all dark. Glass panels in the doors or fanlights would not be sufficient to give light.

In my design "Utility" (there were two of that motto), I give in every case the full size called for. All the rooms for the use of the Board are on the same floor, and all the corridors are amply lighted direct from the area.

I consider it my duty to point out all the foregoing facts to the Board.

Yours faithfully,
JAMES R. RHIND.

TORONTO, March 1st, 1886.

James R. Rhind, Esq., Montreal.

DEAR SIR,—Replying to your favor of the 27th ult., I beg to inform you that the building committee are in no way responsible for the illustrations appearing in the CANADIAN ARCHITECT AND BUILDER.

Yours truly,
(Signed) EDGAR A. WILLS,
Secretary.

MONTREAL, March 2nd, 1889.

Edgar A. Wills, Esq.

DEAR SIR,—Re Board of Trade Building, your favor of yesterday's date just to hand, and in reply beg to state that the illustrations I refer to in the CANADIAN ARCHITECT AND BUILDER are photo lithographs, and therefore exact *fac similes* to a smaller scale of the original drawings, and the CANADIAN ARCHITECT AND BUILDER is not responsible for their correctness, but the architects, Messrs. James & James, who drew them.

Yours faithfully,
JAMES R. RHIND.

P.S.—I trust that you will lay this matter before the Board.
J. R. R.

I am still awaiting a reply to my second letter as above.
JAMES R. RHIND.

PUBLICATIONS.

WE have received from Mr. W. H. Sayward, Secretary of the National Association of Builders of the United States, a copy of the official report of the proceedings at the third annual convention held at Philadelphia February 12th, 13th and 14th last. It comprises a volume of 210 pages, and includes the names and addresses of the officers of the association, the delegates to the convention, and the Builders' Exchanges throughout the United States.

Light shades of paper make a room look more cheerful; large figures make a room look much smaller and occasion much waste in matching the figures. Low rooms should be papered with striped paper having the stripes run up and down, as it makes the room seem much lighter. Subdued tints take off the glare of too many windows. The best effect is produced by having a paper with pattern and colors of a quiet tone, such as does not at once strike the eye on coming into the room. The paper should relieve and set out the furniture that stands in front of it, not attract attention from it.

HAMILTON PUBLIC LIBRARY BUILDING COMPETITION.

WE have to record the advent of another set of conditions for a competition, which have been drawn up by persons having no knowledge of the principles which should govern a competition. We certainly did not expect that a Building Committee in a city of the size of Hamilton would distinguish itself by surpassing those of the smaller towns in the unreasonableness of the terms imposed upon any architects who might think fit to compete in the erection of the Free Library Building. We will state our objections to the terms of the competition as briefly as possible, but before doing so, we will attempt to explain why competitions are considered necessary in the erection of important structures.

The principal object of a competition as understood by architects of good standing is, that the best design, both as to plan and exterior composition, may be obtained. When a number of sets of drawings are submitted, the best one of themecan be adopted, and thus there is an assurance that the building will be erected according to a reasonably good plan. As it is utterly impossible to prepare in competition a set of drawings on which tenders can be asked, it has become usual to ask for only such drawings as will explain the scheme of the competing architect. The number of changes which must always be made in a set of competition drawings, to meet with the entire approval of a building committee, will necessitate a new set of drawings. The architect will also desire to improve his plans when he has become better acquainted with the requirements through discussing them with members of the building committee. In fact, the man who would not under ordinary circumstances alter and improve his competition drawings, would not reflect much credit on himself or on his profession, even though he had won the competition.

Under the above circumstances it has become usual only to ask for such number of drawings as are absolutely necessary to interpret the author's scheme. The drawings are not expected to be elaborately finished nor absolutely accurate, so long as they faithfully explain a feasible scheme. The Hamilton Free Library Building Committee ask for no less than nine drawings, and a drawing showing the system of heating and ventilation—in all, ten sheets of drawings. The Committee also very kindly gives a competitor permission to furnish any number of ½ inch scale drawings provided he is still anxious for more work. Now five or six sheets of drawings would have been ample and have served every purpose. The building can not be an intricate one in plan nor elaborate in finish, and can be easily illustrated by few drawings. An explanation of any points not shown on plans, and a description of the materials proposed to be used should always accompany a set of competition drawings, so we will not object to the same information being called for under the term "Descriptive Specifications." We do most decidedly object to the competitor being asked to furnish quantities. In the first place, they are of no service whatever, and even if they were, they are almost always so inaccurate that no reliance can be placed in them. The dishonest competitor makes his quantities agree with the sum to be expended. The Committee, if they wish such information, should employ an honest and competent man to take out the quantities of such plans as they may approve.

There is no object in asking that the system of heating and ventilation should be worked out. It is not at all likely that the Building Committee will select a bad design because the author has shown a very perfect system of heating and ventilation, or reject a good plan because the author has not troubled himself about the heating and ventilation, or has not shown a system which meets with the approval of the committee. A building after a good design can surely be as well heated and ventilated as one after a bad one. We do not underestimate the importance of good heating and ventilation, but no one with any common sense would for one instant think of erecting a building to serve as a screen or protection to an elaborate system of heating or ventilation. It would also appear from the conditions that the Building Committee have before them a plan which meets with their approval. The size of the building, inside dimensions are given, as also the height of the stories. There is also something to the effect that, "The front 70 feet, to be two storeys: and the rear 45 feet, one storey." These details would not be given if the Committee had not before them some plan on which they are working. They certainly hamper a competitor most seriously, as he will be obliged to waste much time in trying to discover the key to the above arrangement. We should also like to have the Committee explain how they expect to secure 7,460 square feet of floor surface within a space of 7,475 square feet after deducting the area of all internal walls, lost space, and an allowance for corridors, stairs, etc., over and above what they have allowed. The value of building material and labor in Hamilton must be only one half what they are in other places, if the sum of $20,000 is sufficient for the erection of the building. On the dimensions given, the building will cube about 400,000 cubic feet, which at 5 cents per cubic foot would give $20,000, the proposed cost of the building. We believe that we are well within the mark when we state that 10 cents per cubic foot will no more than cover the cost of such a building, and then there will be nothing spent on ornamentation. We cannot understand why building committees will persist in asking architects to make designs for buildings which from their very size must cost from 50 to 200 per cent. more than the amount they state, and then abuse them because they are unable to accomplish the impossible task. The time for properly studying the problem, and making the drawings, is not sufficient. The allowance should have been at least one month, as no architect would care to devote his whole time to the preparation of a competition design without he had "the inside track and a sure thing."

Another, and possibly the most serious objection is, that there is no guarantee that an expert will be employed to advise the Committee in the selection of the best plan. The Committee may consider themselves capable of judging of the merits of the plans submitted, but no first-class architect will agree with them. The more capable the architect is, the more he is averse to have the merit of his work decided by men not possessed of the necessary knowledge. An inferior architect does not object to the decision of a committee, because his work is more readily understood by them, and consequently meets with their approval. His elevation will almost to a certainty take the committee's fancy, where a good design would receive from them nothing but ridicule. The inferior architect also has to fear the decision of the competent judge, as there is not nearly the same opportunities of a plan being approved because of some unimportant feature put in to catch the fancy of the ignorant.

It is to be hoped that all the members of the Ontario Association of Architects will decline to send in designs in this competition, without the Building Committee see fit to change them to meet the wishes of those most interested. One would think that if a building committee is really in earnest in their desire to receive the best plans obtainable for a building, they would make the terms of the competition such as would allow of the best men in the profession sending in designs, instead of drawing them up so that only the second and third rate men in the profession will compete.

The Board of Directors of the Ontario Association of Architects held a meeting on the 2nd inst., and discussed the terms of the proposed competition for the Hamilton Free Library Building.

They unanimously decided to recommend the members of the Association to refrain from sending in designs, for the following reasons:—

1st. Sufficient time is not allowed for preparing designs.

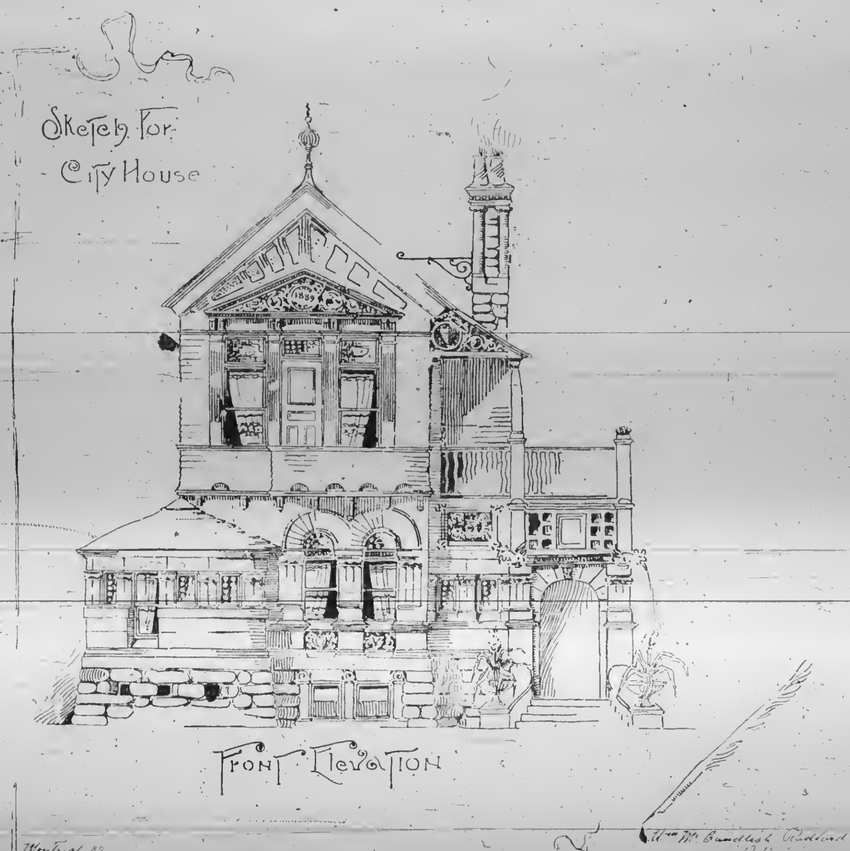
2nd. Much more detail is required in the preparation of the drawings than is at all necessary to properly illustrate the proposed work.

3rd. Specifications and quantities are unnecessary.

4th. The conditions contain no statement that the Committee will secure professional advice to decide upon the respective merits of the designs.

"A circular has been sent from the office of the secretary of the Ontario Association of Architects which, practically, amounts to a mild boycott of the building committee of the Free Library Board. The circular recommends all members of the Association to refrain from sending designs for the library building. The reasons are these: Sufficient time is not allowed for preparing designs; much more detail is required in the preparation of the drawings than is at all necessary to pro-

SKETCH FOR "GLEN TOWER," ROSEDALE, TORONTO.
R. W. GAMBIER-BOUSFIELD, ARCHITECT, TORONTO.



perly illustrate the proposed work; specifications and quantities are unnecessary; and the conditions contain no statement that the Committee will secure professional advice to decide upon the respective merits of the designs."

The above is a clipping from the Hamilton *Spectator* relative to the Hamilton Free Library competition. We have inserted it that we may explain the position of the Ontario Association of Architects as we understand it. There is little to object to in the above with the exception of the word "boycott," which we think should not have been used. It has been and is the custom of building committees to institute competitions with the object of obtaining a design for unimportant buildings. Architects, or supposed architects, have been only too ready to enter these competitions, which were more often a lottery of the worst description, than fairly, honorably conducted competitions. The Ontario Association of Architects propose to stop all unnecessary or unfair competitions, and to that end the Board of Directors send out circulars asking the members to refrain from competitions of which they do not approve, and stating the reasons why they should so refrain. They at the same time try to induce the Building Committee to alter the conditions to meet their wishes, and when they do not, they allow the Committee to proceed without any further remonstrance or action. At present it is a matter of little or no consequence to the best men whether a competition is conducted fairly or not. They have sufficient work to keep them busy, without paying any attention to crude competitions under the management of men who are really unable to distinguish between a good and a bad design, and who almost invariably choose the one having the least intrinsic merit. The profession as a body have become disgusted with matters as they now are, and have determined to improve them if possible. And who have a better right than the men who are continually being asked to compete for the erection of a building, to say what the terms under which they will submit designs shall be? They are at the trouble and expense of preparing plans, and certainly have a right, under the circumstances, to make every effort to receive fair play in the decision. What right has any committee to ask a man to spend $50 or $500 in getting up a set of drawings, and then treat him with injustice? The injustice may be the result of ignorance, but it is an injustice nevertheless when the undeserving man secures a prize which should have gone to another. Architects contend that laymen are incompetent to judge of the merits of architectural design, and ask that professional advice be taken in making the award. There is nothing unreasonable in this. It is only a necessary measure to prevent injustice to the competitors, and secure for the committee the best design sent in. If building committees sought professional advice in all competitions, the condition of architects would be very much improved. We would have fewer buildings which the general public call "lovely", and which the educated architect abhors. Some people maintain that if you place a good and a bad building in respect of design alongside of each other, the most ignorant will prefer the good. We do not agree with them, but maintain that the tastes of the masses require cultivation before they can appreciate what is good in art. One might as well affirm that an uneducated man would prefer Milton or Shakespeare to a dime novel. We all know that the trashy novel is read by hundreds where one person reads Milton or Shakespeare, and yet no educated person would compare the best novel ever written with the writings of either Milton or Shakespeare. If the architects can bring about a better knowledge of architecture in this country, they deserve to be encouraged in whatever methods they may adopt. At this point we will take the opportunity of stating that the press in Canada have about as little knowledge of what constitutes good architectural work as has the average base ball player, and from it little or no help will be obtained. When committees are so penurious that they state that express charges must be prepaid on all designs, and refuse to return the rejected ones to their owners, it is about time that those who have to expend time and money, look after their own interests more closely. All they have determined to do is to refuse to take any notice of competitions when the terms are unreasonable. Architects are one of the parties concerned and have a right to see that their interests are conserved with the same care as the other parties. Where is the man who would not consider that a person had a very large amount of assurance who would ask another to make him an article worth $50 or $100 on the understanding that if he liked it he would buy it from him at one half the cost. And yet that is exactly what these most intelligent (?) and liberal (?) building committees are doing continually. How often it is stated that the architect whose plans are selected will be paid the commission of 3 per cent., or possibly 4 per cent. Sometimes they actually auction the work off by asking the competitors to state the commission for which they will execute the work. This is certainly an advantage to the interior men, as they have an opportunity of gaining a commission by a low bid, if they cannot do so through merit of design. Very often a building committee will select an architect to do their work, and then hold a competition to secure a number of designs from which to select what they may deem of value; and cases have occurred where they even refused to pay the expense of returning these designs to their respective owners, after having kept them for weeks while the favorite was making all the use he could of them. Is it any wonder that architects have determined to put a stop to these very ignoble and contemptible practices?

ART TRAINING.

Editor CANADIAN ARCHITECT AND BUILDER.

THE fact that 30 young men in Toronto have formed themselves into a society called the "Art League" is sufficient proof that if the means of art training were supplied in the city there would be a large number of ardent students. The Art League held an exhibition of the work of its members on Friday afternoon last. There was a very fine display of drawings, and much judgment was shown in the number selected and the method of hanging. It is not my purpose to criticize the work done, more than to say, that while the average was fair, many of the drawings could only be described as indifferently good or bad. There were a few drawings which were really good, and showed much ability in their authors. My main object is to draw attention to the fact, that there is in Toronto an Art League comprised of young men most anxious to study art in all its branches. These young men have not waited to be assisted, but have with a determination worthy of success, gone to work in an energetic manner to train themselves as best they can in the respective branches of a profession which they must love in no ordinary degree. This effort must be a heavy drain on their resources as a society and as individuals, and with the time they give, proves most conclusively that they are enthusiastic in their love of art and desire to improve.

That these young men find it necessary to work alone to improve themselves, must mean that there is no other means whereby they can gain the training they desire. There is an Art School under the control of the Ontario Government which should be able to give these men and boys the opportunities for advancement they desire. It cannot do so, or they would surely avail themselves of it to the fullest extent. It may be that the members of the Art League are really desirous of receiving an art training, and the Art School does not give that training. From what I know of the school, I should judge that to be the trouble. That it is only an Art School in name in the opinion of many, requires no proof; but when we inform the reader that the school is under the management of persons who have little or no conception of art, and that the teachers are equally ignorant, any one will be able to judge for themselves why young men with artistic longings prefer to join a society, and work together along fairly correct lines of study. The Art School at one time had a competent staff of teachers—now it has not; nor will it ever have so long as the management cannot judge as between a good and a bad teacher, except by depending on the candidate's ability to produce certificates of capability from Art Schools often without standing. Occasionally the certificates only state that the holder has attended the school giving the certificate, which is of no value whatever, as many of these schools give such certificates to every student when leaving the schools.

An effort has been made to boom the Toronto Art School, but it has failed and will always fail, so long as the attempt is made to maintain an Art School which does not instruct in art.

ART STUDENT.

QUEBEC.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

THE new chapel for the Quebec Seminary (R. C.) is now fairly under way (to replace the chapel lately destroyed by fire). Including the Sanctuary, it will measure 110 feet in length, with a width over all of 62 feet exclusive of side chapels, of which there will be five on each side, having semi-circular ends to receive the altars. The walls are to be built of hammer dressed stone with fine cut jambs, string courses, etc. The basement is to be vaulted, upon which the tile flooring of the chapel will be laid. When fully completed, the cost will be about $35,000. The contractor is Mr. Thomas Pampalon, the architect Mr. J. F. Peachy.

A new frame building now approaching completion for the Richelieu Navigation Co., on their wharf, is also in the hands of the same architect. It is built entirely of wood, and is of a very neat design. It is intended for ticket offices, stores, etc., and will cost about $3,000. Mr. George Boiteau is the contractor.

The first building on the new line of St. John st. (now being widened), is now being erected for Mr. Dynes. The first story consists of a plate glass front with stone piers, the upper stories forming a dwelling, being built of white brick with stone trimmings. It will cost $6,000. Contractor, A. Cummings; architect, H. Staveley.

WINNIPEG.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

THE competition plans for the Provincial Government buildings have all been sent in, and the architects are waiting now to hear the successful names.

The City council have at last resolved to return all the plans for their proposed new market. This last resolution arrived at by them is very unfair to those professional men whose time and talents have been expended apparently to educate the minds of the Council up to the requirements of their position. To return the immense quantity of work to the authors without any recompense after having culled therefrom all the information required, appears a very unjust and discouraging proceeding. The architects entered into this competition, adhering to the terms thereof as set out by the advertisement, believing of course that the most unusual reservation which the Council thought it wise to insert, of rejecting all the plans, would only be acted upon as a *dernier resort*, and not to be taken advantage of because they have now determined to build differently from the original idea. The Council have instructed Mr. Geo. Brown to prepare plans for the new market, to cost $16,000

Mr. Foulks is building two more stores on his block on Main street.

The School Board are having the Smead hot air heating and ventilating system put into the schools.

The lookout in the building trade is brighter, and there will no doubt be several buildings go up on Main street this season.

BRITISH COLUMBIA.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

THERE are many fine buildings even in the youthful city of Vancouver, of which any city in Canada would be proud. The C. P. R. Hotel is a magnificent brick structure. The New York block, in which Sir Geo. Stephen is interested, the Van Horne block, the Lord Elphinstone block, and several others on Grenville street, are three and four story brick buildings heavily faced with grey granite. Sir Donald Smith has one under way which will eclipse anything on the coast, while the Ferguson block on the corner of Hastings and Richmond streets is a noble edifice. There are a number of fine buildings and business blocks already on the way, and when to these are added, the New Government buildings, Dominion and Provincial, the C. P. R. opera house, the new Bank of British Columbia and Bank of Montreal blocks, now under contemplation, Vancouver will have, in proportion to its population, more fine buildings than any city in the Dominion. Up to last Christmas the total value of buildings erected was $2,000,000. The number of buildings erected last year was about 400 and their value about $1,000,000. A very great increase has occurred since, and at the present time the building boom is just starting for the season, although it has continued more or less all winter, if one flurry of snow and a few nights of frost may be called winter. However, before touching upon some of these in a more detailed way, I should like in my next to give a chapter on the sewerage and water works systems, which will be found, I trust, most interesting.

It must be borne in mind that the enterprise of building a city such as Vancouver is at the present time, was incomparably greater, situated as it was, than if its site were in a prairie or in open, clear country. Where it now stands, three years ago was a dense forest of giant trees, which to cut down, clear away and stump, was a gigantic task. Their enormous roots extend in every direction, and will neither pull out nor rot. Every stump has to be dynamited at great expense and at much risk of life, costing $500 per acre to do it. When I tell you that 1,000 acres of this land have been cleared, and put into lots, that 40 miles of street, have been graded, that 6 miles have been planked, that 47 miles of sidewalk have been laid down, that nine miles of park road have been made and most of it gravelled, that it cost the citizens $60,000 to erect bridges, and that in the aggregate something like $300,000 has been expended in public improvements, including fire halls and fire engines, etc., city hall, market site, public schools, sewerage, and recreation grounds, readers will best appreciate the energy and enterprise that gave to it its being.

Nor is Vancouver the only city in British Columbia. Its older sisters, Victoria, Nanaimo and New Westminster are coming on apace and also showing wonderful development, each of which contains features of special interest in the lines on which the CANADIAN ARCHITECT AND BUILDER is conducted. Not only are these progressive, but all British Columbia, for many years in the Slough of Despond. Its architects and builders are the sons of England, Ireland and Scotland and of the Eastern Provinces, and no nation on earth can boast of better workmen.

OTTAWA.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

BUILDING operations are well under way, a large number of buildings have been commenced, principally dwellings. Very few business blocks and public buildings are as yet spoken of. It may fairly be estimated that the amount to be expended this season will fall far short of last year. The principal work let out by the different architects since last report is: F. J. Alexander, architect, residence for Rev. Mr. Moore, $5,000; residence for Mr. Wild, $6,000. J. R. Bowes, architect, residence for O. R. Smith, $4,500; improvements to By Ward market building $3,500; fitting for new police station, $1,200; store for R. Sholdis $4,500; store for R. Steckel, $3,000; warehouse for J. Martin, $4,200; Buckingham public school, $3,000. G. F. Stalker, architect, residence for J. Gibson, $3,400. The architects report plenty of work in the offices but not ready to let out. A large number of small dwellings are under way on which architects are not employed, and as no account of them is kept in the city hall, it is impossible to give a report of them.

The Ottawa Institute of Architects seem to be pleased with the result of the late convention of architects in Toronto, and individually they hope for a Provincial charter at the next session of the Ontario Legislature.

The contractors here have done nothing yet towards forming a contractor's union, although individually they all favor the scheme, but no one seems inclined to take the initiative. I have no doubt you will be able to bring about a Provincial Association of contractors as you have done with the Architects' Association.

The Architect's Institute have now a room leased for holding their meetings which is open at all times to the members of the Institute. I understand from members that there are a few members of the profession practising in the city who have not yet joined, but it is expected they will join before the Ontario Association is chartered. The Ottawa Institue feel highly honored in having one of their members vice-president of the Ontario Association.

The new Departmental buildings erected by the Government will be ready for occupation on the 1st May, and judging from remarks recently made by the Minister of Public Works in the House of Commons, they will cost when completed close on one million dollars.

AN ASSOCIATION OF ONTARIO BUILDERS AND CONTORS.

TRENTON, May 10th, 1889.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—Regarding the formation of a Provincial Association of Contractors and Builders, I desire to say that I am heartily in accord with the movement, and hope it may be the means of doing much good, as I am fully satisfied there is much room for improvement in the present condition of affairs. I don't complain of the short step between journeyman and contractor referred to by one of your esteemed correspondents, but I do complain of the competition of those who never were good journeymen, who don't know what a good job is like, and in consequence of whose operations the trade in many branches of building is becoming so demoralized that it is next to impossible for a builder of any taste and ability as a mechanic, to live and pay 100 cents in the $, especially in our smaller towns. Another great evil that I see is the attempt to do without the services of the competent architect in supervising the work of construction. We are called upon to figure on the cost of buildings according to certain plans and specifications, and sometimes are disappointed on being told, after putting in as reasonable an offer as we possibly could, that our tender is far too high. On seeing the proposed building erected, however, one is inclined to suppose that the fine specification must surely have evaporated long before the first cobble stone of the miserable pile now before us had been thrown into the trench and called a foundation.

Now, sir, if the Association could in any way cope with such evils as these, it would not only benefit those engaged in the business, but also the public. There are also many other existing evils which in my opinion, such an Association might help to remedy, besides forwarding the interests of the trade generally; but having trespassed already too much on your valuable space, I must leave the matter to be developed by abler men than myself. Promising to assist as far as my ability will warrant, I remain,

Yours truly,

ONE WHO WOULD LIKE TO BE A GOOD BUILDER.

Messrs. Aikenhead & Cronbie, of Toronto, have secured the contract to supply all the hardware required for the new Toronto Board of Trade Building. The contract price is understood to be in the neighborhood of $6,000, making the largest single order ever supplied by a Canadian dealer.

PROTECTION TO ALL.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—The policy of this country is to build up its industries, and to that end high duties are imposed on all materials which are or might be produced at home. I will not offer an opinion as to whether this policy is a good or bad one. In the eyes of some it is bad, but there are others (and they are certainly the majority at the ballot box) who believe it to be the best method of building up the country. If such is the case, then the further the principle is extended the better; in fact in justice to all it should be carried out to the fullest extent. We find that while all manner of manufactured goods have to pay large duties, and the manufacturers are thus enabled to carry on their business to their own profit and to the benefit of the country as a whole—still to the loss of the individual who has to pay the increased values—there are those who have pay this increased value on every article they consume, while they are not protected in the slightest degree from foreign competition in their pursuits, and are thus placed in an unfair position. Such treatment of the individual is not just or honorable, and may be detrimental to the best interests of the country as well.

One of these branches to which I refer is that of architecture. An architect in this country must pay his proportion of customs duties on what he consumes, and also on all architectural works which he may require for advancement in his profession, while he is not protected from the competition of architects living under another Government. It is true that duty has been exacted on plans, etc., at various times, but there is no fixed charge, nor is any definite line of action followed. There should be a duty on all plans prepared by foreigners for buildings erected in this country equal to, if not greater than that imposed on manufactured goods. The duty should also be placed at so much per cent. on the total cost of the building, which would save all trouble in arriving at the value of the plans. For instance, if it were decided that the duty on plans should be 30 per cent. on the value, it could be raised by requiring a payment of 1½ per cent. on the total cost of the building.

It may be asked, why should a duty be placed upon plans for the benefit of Canadian architects? First, that they may be placed in equal position with those who are now benefited by protective duties; 2nd, that they may be encouraged to study their profession that they may be enabled to carry out important work; 3rd, that art may be encouraged and fostered in Canada through her own citizens; 4th, that men who are unable to judge as between good and bad architecture, and who are under the impression that they can not secure outside an American city an architect of sufficient capacity to execute their work, may be obliged to entrust their work to home talent or pay to the Government duties on the plans they thus obtain outside the country in which they have been enabled to make a fortune, largely through their not having to compete with foreigners; 5th, to prevent our ablest men leaving their native land for another, which will thus receive the benefit of their energy and ability.

There is no truer proverb than that "A prophet is not without honor save in his own country." Largely, all the architectural work that has been done in this country by outside men is inferior to the work of Canadian architects. Much of this work has cost very much more than any work done by a Canadian architect, but excessive cost does not constitute good work. A man with plenty of money can build a solid building, but what about the design? and that is where nearly all the work by outside talent is defective. Some of it is exceedingly bad—worse it could not very well be—but it is saved in the eyes of the public because it has the appearance of great solidity and cost. A good design has merit no matter of what material it may be constructed, even though of the cheapest—and a bad one is meretricious, even though carried out in the most expensive materials. I may also mention that size does not constitute artistic excellence, as the vast majority of people seem to imagine. If such were the case, the pyramids would be the most perfect piece of architecture in the world. Excellence of design may be found in small unpretentious structures, and inferiority in large structures built of the most expensive material.

The reason given by those who have patronized outside talent is, that Canadians have not had the necessary experience, and that in giving the work to others they are entrusting it to capable men in whom they have confidence, because they have erected work of a similar character to that which they contemplate. In many cases the reason is not based on facts, for often these parties have gone to incapable men who are not Canadians; but the fact that they live far enough away to allow of their being credited with qualities they do not possess, is sufficient to transform an incompetent man into a most capable one. But if Canadian architects have not the necessary experience to erect their buildings, when will they have seeing that they are not afforded any opportunities? So far, they have been expected to put up as substantial and expensive looking a building for $50,000 as an architect from the States has been enabled to do with twice or three times that amount. That they have erected more artistic buildings does not count, so long as they have not been erected in costly materials—the refuge of inferior designers. It is only fair that Canadians should be given the opportunities requisite to allow of their perfecting themselves in their art. Advancement in art will benefit this country just as much as the increase in the commercial and manufacturing interests. The people have shown that they believe that such increase benefits the country, or they would not pay the protective duties. Then why should not those who have benefited by their business interests being protected, be made to assist in the cultivation of the much more desirable thing than mere material progress,

If something is not done to encourage literature and art in this country, we will have all our most capable young men seeking other fields. The man who feels he is capable of great efforts will not be satisfied to fulfil small duties. He will seek wider fields for his talent; and is he to be blamed for doing so when he is not only refused the opportunities which are justly his, but is practically insulted as well in the land of his nativity? For myself, I intend to recommend all young men of ability with whom I come in contact, to go to the States in preference to remaining in Canada. When a Provincial government goes to a foreign architect and accepts at his hands a design for the Provincial Parliament Buildings so very inferior to the Canadian design, little can be expected. It is unpatriotic and worthy of highest condemnation to throw our country over for money, but it is equally if not much more worthy of condemnation, when a country will not cherish its own children, but instead, gives assistance to those of a foreign state.

PROTECTION OF ALL INTERESTS.

PRECAUTIONS IN BUILDING.

BY OWEN B. MAGINNIS.

BUILDERS having cellars and foundations built, on which to erect frame structures, should carefully watch the work of the stone mason or bricklayer, to make sure that they are correctly measured from the cellar plan, and all breaks, as bay windows, etc., should be built from wood templates. The tops of the cellar walls must also be finished perfectly level from corner to corner, and level across all bays, in order that the sills may lie solid and level on the stone or brickwork. After the lot lines have been determined, and the ground is ready to be staked out, it should be measured exactly off the plan, and wooden pegs driven at the extremities of all the interior and exterior angles of the intended building. From these pegs lines are stretched, so that the digger may be able to cut the sod to a line, and dig out the foundation to the shape and depth required. It would be well if the house be set on a level or slight hollow, to keep the cellar up higher than stated in the specification, to permit the owner, if he so desire it, to grade the ground surrounding the house on a slight pitch, to carry the rain dripping from the walls away from the foundation, making the cellar much dryer.

In regard to footings, they ought to be of large area, especially under piers supporting girders. A broad stone, well bedded into sound, well rammed clay, or on cement concrete, makes a good footing.

Some builders do not build their piers until the house is framed and raised, but it is better building to put them in with the rest of the underpinning. Posts under cellar girders, should also have a good footing of stone, not likely to crack. These too are often omitted, and the girders temporarily sustained till the frame is complete, as it is claimed they can be more solidly placed when the weight is on the girders, by raising the girders to a slight camber with a jack, and setting in the posts to suit, and retain the camber. Chimneys likewise require wide, sound footings, and all footings should be laid in good cement.

Framed houses, which are situated on very much exposed sites, and likely to be subjected to extreme wind pressure, should be anchored to the foundations. The anchors can be made of flat wrought iron, having a round shank which passes vertically through the sill, holding it firmly to the top of the foundation wall, by having a nut and washer on the upper end. In ordinary frame work, anchors are rarely used, as the weight of the superstructure is sufficient of itself to resist the pressure. Rough or under-flooring in dwellings of this class is better laid diagonally than in the usual manner, reversed on each story to brace the buildings horizontally, also sheathing and roof boarding.

Corner boards, outside window and door casings, and vertical bands, generally have their edges against which the clapboarding abuts, wrought square. It is a better method, however, to see thay are jointed a little off the square, or, mechanically speaking, a trifle standing from the back, for the reason that this edge throws off the rain water, and in putting on the clapboards or siding, if they be marked to the length on the outer arrises when they are driven or pushed back against the sheathing, the joints are bound to close tightly, which is very essential where there is sure to be shrinkage, as in this case.

All tin flashings on top of door and window caps, if shingled in with each course of shingles, need to be given plenty of overlap. Valleys in roofs can be constructed in this way, but it is preferable to make the valley gutter in one entire piece, of sheets of tin soldered together, to diminish the chance of leakage, and all nails should be kept as far back from the intersection of the valley as possible.

Shingles in valleys and on hips last longer when laid with their grain running in the same direction as that of the hip or valley. When they are cut on the angle, the end wood absorbs water and hastens rot, whereas the straight, close running grain of the wood rejects the moisture more, and leaves the shingles more durable. Few carpenters can now be found, except among the older hands, who are familiar with this mode of shingling, as it is really a very old, yet excellent one, and comparatively simple, involving little more time than the later and inferior method. All that is necessary, is to taper the shingles so that they radiate as it were from the angle of the hip or valley to straight joint square to the eave. Combs on ridges are scarcely to be recommended, but if they must be employed for the sake of economy, are best run up on that side on which the angle of the rain in that latitude usually falls. Tongued and grooved ridge boards are an improvement on the comb, that is, if the joint is well bedded with white lead. Wooden ridge rolls are better still, and the best of all is the galvanized iron cresting. Rolls and ridge boards should be well nailed through the shingles and into rafters, and not to the shingles only. Hip shingles should be cut with the saw to make a straight job and not hewn with the hatchet, and properly overlapped.

SANITATION AND HEATING

THE MONTREAL PLUMBING CLASSES.

THE plumbing class in connection with the Council of Arts and Manufactures has just completed its studies for the season, and the committee appointed by the Master Plumbers' section of the Montreal Contractors' Association to examine their work and award the prizes, reports the progress made as in every way satisfactory. The Master Plumbers have given book prizes, valued at twenty-five dollars, for those who won out of twenty-four competitors. The full class comprised thirty-two members, and the winners were as follows :

Attendance—1, A. Clelland ; 2, E. H. Sharpe.
Best joint wiping—1, F. Force ; 2, H. Belanger.
Best lead working—1, W. Skead ; 2 H. Legaux.
Best lead bending—1, H. Sharpe ; 2, J. Williams.
Best fixed work—1, W. Brown ; 2, H. Hillman.
Neatness of work—1, W. Skead ; 2, J. Williams.
General proficiency—1, W. Skead ; 2, G. Wooding.
Best assortment—G. Wooding.

There were 125 samples of work shown, and the examination was oral as well as mechanical. Messrs. Bellevance, Galaneau, Peard, Briggs and J. W. Hughes were examiners, and they congratulated the teachers, Messrs. Horton and Brittan, on their success. They also show the necessity for an increase in accommodation for the class, which is expected to double its members for the next course, and urge, too, that arrangements be made for a second and a third course—the second to be lessons in mechanical and freehand drawing, and lectures on the science of the business ; the third course to be lectures, instruction in arithmetic and elements of bookkeeping, etc.

The Minister of Education for Ontario has decided that Hygiene may be one of the subjects taken at the examination for entrance to High Schools.

Analysis of natural gas shows the proportion of each constituent in 100 parts of the gas to be as follows : Carbonic acid and carbonic oxide, $_{610}$ each ; oxygen, $_{810}$; olefiant gas, 1 ; ethylic hydride, 5 ; marsh gas, 67 ; hydrogen, 22 ; nitrogen, 3.

In reporting upon the sanitary condition of the Toronto public schools, the Medical Health officer suggests that in the construction, or reconstruction, of school buildings, adequate ventilation should be supplied by means other than windows.

An investigation has been made into the sanitary condition of the city hall of Montreal. A number of leakages were found in the pipes through which sewer-gas escaped. An estimate was ordered to be made of the costs to put the place in good order, the tile sewer to be replaced by iron pipes ; a new system of water-closets and a better heating system to be put in.

Attention is called in the report of the Labor Commission recently presented to Parliament, to the defective sanitary condition of many working men's dwellings. The report recommends that the letting as a dwelling of a house in a bad sanitary condition should be forbidden by law, that frequent inspection should be made, and alterations or repairs necessary to health ordered.

The Master Carpenters Association at its annual meeting recently elected the following officers : Messrs. J. J. Withrow, president (re-elected) ; A. Weller, vice-president ; J. C. Scott, treasurer ; and Wm. Simpson, secretary-treasurer. Committee, Messrs. G. Moir, Wm. Clark, Wm. Forbes, R. Dinnis, and C. R. S. Dinnick. A resolution of sympathy was passed with the bereaved family of Lionel Yorke, late President of the Board of Federated Builders.

Recent experiments of English chemists are said to have shown that lead pipes are rapidly corroded by water containing quicklime or blue clay, or by water and air mixed or alternated, while sand and carbonate of lime afford considerable protection by forming an insoluble lining. The best protection of all is afforded by a mixture of limestone and sand. It is, hence, recommended that when water is circulated through lead pipes, protection from lead poisoning may be secured by allowing the water first to pass through a mixture of limestone and broken flints.

DECORATION AND FURNITURE

A FEW POINTS ON HOUSE PAINTING.

IN all outside work be sure the surface you are to paint is dry. If it is a new job and is to have three coats of paint, your priming should consist of two-thirds ochre and one-third lead mixed with raw oil. If you do not procure ochre ground, have it mixed up three or four days before the job is ready.* Strain this thoroughly through a wire strainer, and thin down just as thin as it will flow out and not run. But before you apply the paint see that your work is well dusted and is clean. Be sure and cover all the under edges, and spread your paint out evenly, not leaving any place untouched. When this is dry, putty up all nail holes, split places, bad joints, etc. Putty with a knife, and do not leave any surplus putty on the outside. In second coating, if you can procure a good ready-mixed paint that is composed of lead, zinc and oil, always use it in preference to your own mixture. It will stand longer without spotting or fading, and will cost you less in the end and give much better satisfaction all round. Good reliable house paints are now manufactured by several firms. Select harmonious colors, and always take in the size of the house, the architecture and surroundings. A green house among a lot of green foliage would be out of place ; it would hardly be seen. White is always objectionable save as on a schoolhouse upon the prairie—as a mark of prominence. Remember in trimming that the law of light and shade requires that sunken places and indentations should be the darkest. Follow this out as nearly as possible, and you will add beauty and artistic taste to your work. Keep your paint, your work and your tools always clean. Never put on a pot of paint that has stood open a day or so without straining. It is better to strain every pot of paint before you commence to work ; it will mix it more thoroughly. I never found a can of ready-mixed paint just opened that I could not get some skins out of. See that every part of your work is nicely and smoothly covered. I always trim cornice before painting siding. I run my siding color along edge of cornice, then trim, and then finish siding. I then have done, and no ladder or staging marks or paint spots to touch up. Be careful of your porch floors ; don't get them all spotted ; it dries, and looks bad when you come to finish up. Paint the under edges of all sash ; they will not then rot quickly.

The inside may be finished as the owner or architect may direct. If a natural-wood finish, see article on that subject. Oil the inside frames that are put into the plaster with raw oil.

When you come to painting inside, see that the work is cleaned off perfectly, and that the rooms are all free from dirt of any kind. Have one place to keep and mix your paints, and put down boards or a piece of canvas. Do not dirty up the whole house with daubs of paint. If you use tobacco, have a box or keg or other receptacle to spit in. Do not spit tobacco juice all over the house. When the work is to be painted, use zinc paints as much as possible ; they are not so poisonous as lead. Always prime as nearly the color of your finish as possible. Turpentine may be used more freely inside, but oil will look better, last better and go farther.—*House Painting and Decorating*

* Ochre unground should never be used, as it is so coarse that the work is not only marred, but becomes a receptacle for dust and moisture and invites mildew.—Eds.

A very handsome memorial window to the late Hon. James Ferrier, will shortly be placed in the St. James St. Methodist Church, Montreal. The subject is "Christ on the way to Emmaus." The figures of Christ and disciples are marked by strength and vigor of drawing, while the drapery has a rich silken sheen secured by a new and ingenious method. The work as a whole is executed in a highly artistic manner, and is a further evidence of the ability of our native designers to meet all the requirements of the market. To Messrs. Castle & Son, of Montreal, belongs the credit of having executed this beautiful piece of work.

DECORATION AND FURNITURE.

UPON entering a room, anyone in the habit of thinking about repose, order or design, can see at a glance whether fastidious taste has presided over the selection of its furniture and choice of decorations, or mere reliance placed upon the recommendation of the decorator, upholsterer, or commission-agent.

One of the most important features in the proper adornment of the interior of our houses, and one certainly the least considered, says the *Plumber and Decorator*, is the curves of the various articles of furniture, and of matters of decoration generally. The correct arrangement of outline gives a peculiar character to all the finest furniture. It has been urged that the "composition of curves will be most agreeable when the mechanical means of describing them shall be least apparent." We know that at the best period of art the curves used in mouldings and ornaments were those of the higher order, such as conic sections ; whilst in the period of declining art, circles and compass work prevailed. In the choice, therefore, of your cabriole chairs, tables, and pier-glasses, look to their curves, and to the relation they bear to the other furniture of the room, and to the room itself. This necessity equally applies to all the minor articles where undulatory lines are in use ; and, as the laws of beauty are much more arbitrary than is generally supposed, an investigation into the causes which make one article beautiful and another the reverse is a very useful and a very agreeable recreation.

We object to the bulge in a jug because it is too sudden, or we delight in the outline of a vase, or we greatly prefer the oval frame of a particular picture to the other square ones, probably not remembering that our taste has been guided by the most subtle and delicate laws of geometry, plain and solid. Arabesque designs owe their beauty to the highest principles of this science, showing the close relationship between art and science—so close, indeed, that in some cases it is almost difficult to say where the one begins and the other ends ; and so wonderfully formed is the human mind, that it arrives at results and produces wondrous effects before the causes and principles which have led to them are discovered.

The next important matter for consideration is *arrangement*, so that one piece of furniture may not unduly obtrude on the observation of the beholder to the detriment of its neighbor, nor its adjacent articles. The eye loves the contemplation of harmony, and no harmony can exist in a chamber, however magnificently furnished, unless proportion is observed. How often the entire beauty of an otherwise well-furnished room is utterly ruined by a gaudy wall-paper or floor carpet, the ill-assorted colors of which dissipate the vision, and do not permit the eye a moment's rest on worthier objects. Repose is so necessary for the visual faculties that they enjoy nothing without it, and as the eye naturally first seeks the floor, it is best fitted for the enjoyment of surrounding objects of beauty if it does not rest on a pattern which might suggest the idea of an iris distorted into madness by the agonies of the loom ! The same remarks apply, of course, to the papering of the room. There, again, patterns of all kinds are destructive to the effect of decorative furniture, although, when there are neither pictures on the wall nor ornamental objects around, paper of delicate and appropriate design is an excellent substitute—and comparatively a cheap one—for more expensive means of pleasing the eye and satisfying the taste ; but do not indulge in both, for each will be neutralised by the other. In short, a room furnished with incongruous objects, without regard to harmony and arrangement, however admirable they may singly be, is like a room full of people talking at once, making the whole mere jargon and din, even though each individual speaker may be an impersonation of wisdom itself.

George B. Pelham, a prominent New York architect who superintended the erection of the Government buildings at Ottawa, is dead.

Mr. Sanford Fleming, of Ottawa, the well-known Civil Engineer, has generously donated $5,000 to the Canadian Institute at Toronto.

Mr. H. Saxon Snell, of London, England, architect of the new Victoria Hospital, Montreal, spent a day or two in visiting the General Hospital and other important structures in Toronto, recently.

MANUFACTURES AND MATERIALS

MANUFACTURE OF PLAIN AND ORNAMENTAL PRESSED BRICK, HOLLOW BUILDING BLOCKS, ETC.

By R. C. Penfield.*

THIS subject to which we have been assigned, comprises more than can be properly treated in a paper suitable to be read before this Association. We will therefore drop out the ornamental pressed brick portion and so much of the hollow building block part, as should be treated from the stand point of hand made terra cotta, and confine our remarks exclusively to such blocks as can be made on a dry moulding, stiff clay machine or press. Hollow building blocks is certainly a dry subject, and it is doubtful whether we will be able to demonstrate that it has merit either from an economic or an artistic stand point, to give merit to our effort.

Is it not passing strange, if there is anything in it, that it has gone so long undeveloped, or is it one of the lost arts or useless arts? So far as we know, the use of hollow building blocks for general building purposes has never been fully developed in this country. It is true at Cuyahoga Falls, buildings and foundations have been constructed of vitrified hollow blocks of a dark brown or stone ware glaze appearance, that gives one the impression at once of an old jail, and is a failure from an artistic stand point. The Pioneer Fire Proof Construction Company of Chicago, have an office built of that kind of material, that is a good effort in that direction and has more artistic merit. There may be other buildings in different portions of our country, but the journals devoted to this art do not, and have not shown how hollow blocks of burned clay can be utilized for general building purposes. Our experience in their manufacture and in the construction of buildings connected with our manufacturing establishment, has demonstrated the fact that blocks do not want to be made too large. The first building we constructed was made of blocks 8x8x12 inches, with only one partition through the centre of the block.

One difficulty with the size of this block is to make them long enough to give the proportion. A block ought to be made three times as long as it is thick to be any where near the relative proportion of a brick. This would require an eight inch block to be 24 inches long. Any one conversant with the manufacture of tile will readily concede the difficulty in making blocks that long, and have them straight. The loss in the manufacture of blocks that size and length, would be much more than smaller ones and more inconvenient to handle, both for the masons as well as for the manufacturers. For general building purposes, the blocks ought not to be more than 12 inches long on account of the openings, and then the architects should space the openings with reference to the length of blocks as nearly as possible. We have established as a proper thickness for a standard block, 5 inches. This is equal to two courses of brick, and makes it convenient to make a bond where brick are required as in chimney breast, etc. Having established the thickness, the relative length naturally follows. For proper proportion, the most pleasing effect will be had if this block is 15 inches long, and it might be well for first-class jobs to make the front blocks that length. This involves another difficulty, and that is making the corner blocks. In every instance the corner blocks are made with what we call a side cut die and cutter, and as the ends of the blocks must be one half the length, this would require a block 7½ wide by 15 in length. This is a large block to make, but it can be done with no particular trouble. The difficulty is in loss by the ordinary accidents of manufacture, and the loss of one large block is greater than a small one, and the liability to loss is greater with the large than with the small. The rule should be not to make blocks longer than 12 inches, and then the corner block will have to be only six inches wide to make the bond correct. About three grades of blocks as to width will accommodate any building from a cheap cottage to a mansion. To commence with a cottage, we would make a block 5x8x12, corners 6x5x12, holes running vertical, side cut. A wall constructed of one course of these blocks would be equal in strength to an 8-inch brick wall, and the plaster can be placed on the hollow wall direct, and save cost of lathing it, etc. Now the next combination for heavy or thicker walls, can be made by using in connection with these blocks, a block 4x5, and if it should be desirable to make an air space, these blocks can be made one or two inches apart, using the 4x5 for the inside courses, and alternating every six courses, putting the 8-inch block on the inside and the face block 4x5 for the front. This will make a 13 or 14 inch wall with an air space of 2 inches if desired, or a 12-inch wall without the air space, and in either case, a wall bound thoroughly and very strong. With these two sizes of blocks for stretchers, a number of combinations can be made. Should it be desirable to make a 16-inch wall, two courses of 8-inch blocks can be used and occasionally a 4 inch-block used to tie courses. Four dies are all that are required to make any of these combinations. One for corners 6x12, this is a side cut die, with shell 1½ or 2 inches thick, one for the window and door jamb, 6x6, cut 5 inches long, same as corner blocks to correspond with the thickness of the stretcher. The walls of these blocks or shell should be 1 inch thick, more or less according to the quality and strength of the clay. The corners are side cut blocks, and should have a shell as remarked above, not less than an

* Read before the Ohio Tile, Brick and Drainage Association.

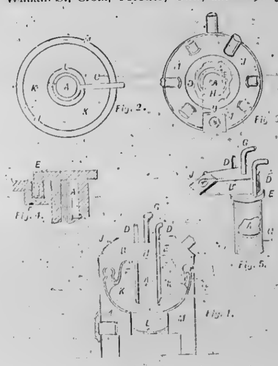
inch and a half in thickness because it is important to have a bed for mortar in raising the corners.

Now, gentlemen of the convention, you have a short but concise description of the coming building material of the country. If the details are followed, and the mason work well done with the blocks as above described, a cheap, durable, dry wall can be made that will far excel in beauty and cost an ordinary brick wall, but our theme is just begun. We have the subject only just blocked out. I have described only a plain smooth wall with no ornamentation, not even a round corner. When it comes to a question of art, the field before us is limitless. Varieties of mouldings that can be made on the face of blocks for special use as water tables, belting courses, cornices, trimmings around the windows, etc., etc., are too extensive for more than mere mention in a paper of this kind. Also beaded work, either coarse or fine or the two combined in the same block, or what is called in stone work Crandall finish. These and numberless other kinds of finish, furnish opportunities for the student of art to expend his best inventive skill in planning combinations for beautifying and ornamenting to a degree far beyond our present conception, and will at the same time add but a trifle to the cost of constructing, beyond the use of just such a plain, smooth, simple block. The cust of a mould is small for the manufacture of either plain or ornamental blocks, so that the manufacturer can afford, if he has to, almost any design at a trifling expense over a plain block. We have made no mention yet of the possibility of producing beautiful varieties for artistic effect, of the various combinations that can be made with brick or terra cotta work mixed in with the different varieties of building blocks.

RECENT CANADIAN PATENTS.

Combined Hot Water and Hot Air Furnace.

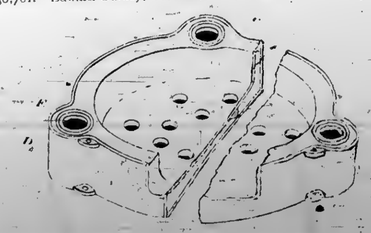
No. 30,670. William St. Croix, Toronto, Ont., dated 29th January, 1889.



Claim.—1st. The cylindrical coal feeder and water heater letter A, Fig. 5, combined in one arrangement, substantially as described above, and shown on the several figures of the drawings accompanying this specification. 2nd. The coal shute or feed box letter B, Fig. 5, arranged with the ventilator in the door thereof, letter J, with the slide H at the bottom thereof, and the gas escape G at the top thereof, all shown on figure. 3rd. The gas tight joint or attachment of the cylinder to the furnace, as above described and shown in the drawings, letters E and F, Fig. 4, also the mode of placing the coal feeder, and water heater A into the furnace without fastenings, so that the same may be lifted out of the furnace and replaced again at pleasure without difficulty or injury to the furnace. 4th. The combination of hot water and hot air generators in one furnace, as shown, and described in this specification and in the accompanying drawings, all substantially as set forth.

Sectional Hot Water Boiler.

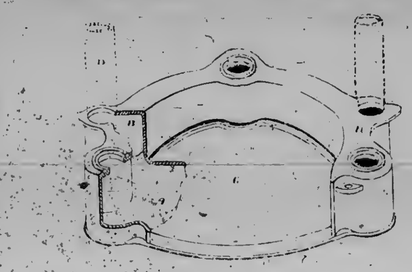
No. 30,781. Edward Gurney, Toronto, Ont., dated 14th Feb. 1889.



Claim.—1st. A section having its top and bottom plates arched inwardly, the vertical portion connecting the top and bottom plates being curved on a large easy sweep, substantially as and for the purpose specified. 2nd. A section having its top and bottom plates arched inwardly, the vertical portion connecting the top and bottom plates being curved on a large easy sweep, and a bead cast on the outer edge of the bottom of each section to overlap the section on which it rests, substantially as and for the purpose specified.

Sectional Hot Water Boiler.

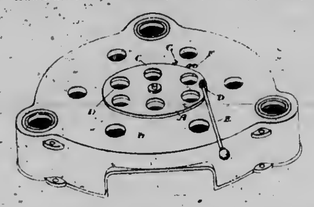
No. 30,782. Edward Gurney, Toronto, Ont., dated 14th February, 1889.



Claim.—1st. A hollow ash-pit section having a water-space formed in its bottom, and communicating directly with all the other water spaces in the boiler, and with the return pipe or pipes, substantially as and for the purpose specified. 2nd. A hollow ash-pit section having a water-space formed in its bottom, and communicating directly with all the water-space in the boiler, and with an extension chamber or chambers formed in the section, and having a hole or holes pierced in its or their crown to receive the return pipe or pipes, substantially as and for the purpose specified.

Sectional Hot Water Boiler.

No. 30,822. Edward Gurney, Toronto, Ont., dated 19th, February, 1889.



Claim.—1st. In a sectional hot water boiler, having a series of vertical smoke flues made in its centre, in combination with a disc-shaped damper pivoted in the centre of the section, and having holes pierced through it to correspond with the smoke-flues in the section, the whole being arranged substantially as and for the purpose specified. 2nd. In a sectional hot water boiler, having a series of vertical smoke flues D made in its centre, in combination with a disc-shaped damper A pivoted in the centre of the section, and having holes C pierced through it to correspond with the smoke-flues D in the section B, stops F and G extend above the section B, and a handle E attached to the damper A and extending to the outside of the section B, substantially as and for the purpose specified.

Hiram Walker & Sons, of Walkerville, intend starting a large brick industry near Kingsville. Ont.

The Imperial Portland Cement Company has been incorporated with headquarters at Montreal, and a capital of $100,000.

A manager has been appointed to run the Bennett Furnishing Works at London, Ont., until a satisfactory sale can be effected.

The owners of the Madoc black marble quarry are to give their property a critical inspection with the view of resuming operations.

Messrs. Clare Bros., manufacturers of heating apparatus, etc., Preston, Ont., have recently been making important additions to their works.

The Toronto Radiator Company have lately purchased the large manufactory of the Toronto Stove Mfg. Co., and are adding thereto an extension of 66 feet.

It is said a company of French and Belgian capitalists has decided to establish an iron pipe factory in Three Rivers, Que., which will employ 700 or 800 men.

A new Asbestos company is issued in England with a capital of £40,000, to acquire and work four properties in South Garthby and Coleraine, Quebec. Alfred White of Quebec, is the vendor.

A company of Syracuse capitalists, with a capital of $100,000, has purchased an inexhaustible granite quarry on Grindstone Island in the St. Lawrence. The granite is said to be of the finest quality.

The waste cuttings of cork are said to be used in England for the manufacture of bricks impervious to heat and dampness. The cuttings are reduced to powder and mixed with lime or clay and then pressed into bricks in the usual manner.

A simple way of approximately ascertaining the cost of a building is to "cube it out." This consists of first finding the number of cubic feet in the building—measuring from half way down the footing to half way up the roof—and multiplying by a figure which represents the cost of a single cubic foot. By figuring on buildings of which the cost is known, it is an easy matter to obtain the prices of the unit foot in different descriptions of buildings.

CANADIAN ARCHITECT AND BUILDER

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CONSTRUCTION · SANITATION · ENGINEERING

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In ordering change of address give the old as well as the new address. Failure to receive the paper promptly should be reported to this office.

ADVERTISEMENTS.

rices for advertising sent promptly on application. Orders for advertising should reach the office of publication not later than the 12th day of the month, and changes of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The Ontario Association of Architects has appointed the "Canadian Architect and Builder" its official paper.

THE unusual amount of rain during the last month had the effect of retarding considerably the progress of building operations, and served to offset to a very large extent the advantages of an early spring.

THE consolidation of the American Institute of Architects and the Western Association of Architects was effected by a majority ballot vote of the members on the 20th of May. A convention of the members of the new organization will shortly be arranged for.

WE are pleased to notice the promises of improvement which our American contemporaries, the *National Builder* and *Builder's Gazette*, are making to their readers. We trust they will include the giving of proper credit for original articles copied from other journals, the CANADIAN ARCHITECT AND BUILDER not excepted.

ARTHUR Wellesley Peel, Speaker of the House of Commons, in welcoming the visiting American engineers at Leamington the other day, said the English people admired the great feats performed by American engineers. Anyone travelling in America was bound to admire the enormous energy, prowess and force that dominated the powers of nature.

NOVA Scotia freestone is said to be in active demand in New York city, and a fleet of vessels is engaged in carrying stone to that city. The Nova Scotia quarries are unusually busy. The short C. P. R. route to Halifax opened for traffic during the past month, should result in the use of larger quantities of this stone in our western Canadian cities.

THE Confederation Life Association is to be commended for its determination to have its new buildings in Toronto designed and erected by a Canadian Architect. We trust the Association will further manifest its patriotism and confidence in Canadian ability by appointing a Canadian as expert to judge the plans in the forthcoming competition.

THE labor agitators in our Eastern cities, whose motto is the greatest amount of remuneration for the least amount of labor, are in danger of being outdone by their more progressive brethren of the Pacific coast. Vancouver, B. C., advices state that the Plasterers' Union has passed a resolution declaring that eight hours shall constitute a day's work, and $5 the standard of wages per day.

DURING the last few years, the towns throughout Canada have been adopting the electric light and improved methods of water supply. It is a noticeable fact that very many contracts for the construction of water works systems in country towns have been secured by American companies. It looks like lack of enterprise on the part of Canadian contractors to allow this work to be done by foreigners, who certainly should not be able to work to the same advantage as resident contractors.

THE St. Louis *Globe-Democrat* makes the alarming statement that lepers have invaded British Columbia, and had such free access to the Indians that the whole race of red men is infected, and adds that the antagonism to Chinese immigration will be more widespread than ever, and will be based on something beside race prejudice. It would be far better to stop quarantining against yellow fever and small-pox, for while the latter kill more quickly, leprosy devours its victims with a living death. If our contemporary is correctly informed, it is high time that the Dominion quarantine authorities should seek to rid the country of such a terrible plague.

REFERRING to the article published in our May number urging some Canadian manufacturing firm to begin the production of the finer class of bronze hardware, the E. & C. Gurney Co., of Hamilton, inform us, in a letter published elsewhere, that they are experimenting with that object, and hope shortly to be in a position to supply the desired class of goods. We are pleased indeed to hear that the opening pointed out in our article bids fair to be so soon taken advantage of. The enterprising company who have the undertaking in hand have our best wishes for success. Should they be able to produce a class of fine hardware approaching nearly in quality that hitherto imported, they will be entitled to the fullest support of Canadianarchitects and builders.

THE best remedy for the smoke nuisance which the Local Board of Health of Toronto is calling upon the manufacturers of the city to abate, would probably be the employment by the owners of steam plants of properly qualified men to manage them. One of the manufacturers who was present at the

consultation with the Health Board stated, that in addition to a smoke consuming apparatus his firm employed a skilled engineer. As a result, there were no complaints about the smoke from people residing in proximity to their establishment. A writer on this subject, in an American contemporary, says: "It is a *fact* that a steam generator with properly proportioned grate and heating surfaces and combustion chamber, with all these parts large enough to perform the work without forcing, may be fired continuously and regularly, allowing the fuel to heat gradually and give off its gases slowly, and admitting air in sufficient quantity, and as the fuel heats, forcing it regularly forward on the fire without producing smoke. This process is also the most economical of fuel. The same result in a less degree may be obtained by firing with small charges evenly spread over the fire. On the contrary, a hot fire with a heavy charge of coal thrown directly upon it, evolves so large a quantity of gas that its volume prevents the proper admixture of air and the hot gas thrown against the cooler boiler precipitates its carbon, or in other words, makes smoke; on the other hand, a low fire suddenly forced and charged with fresh fuel, gives off gases at too low a temperature for full combustion and smoke is again produced." The production of smoke by either process means waste of fuel."

WE are pleased to observe the patriotic spirit which prompted certain of the Toronto aldermen to object most strenuously to the giving of the contract for the supply of steel plate pipe required for the extension of the water-works to an American firm. The quantity of pipe required was 6,000 feet of 60 inch, and 4,600 feet of 48 inch. For the former, a Canadian firm sent in figures $900 below those of the American. For the smaller size and quantity the figures of the American firm were the lowest, and the Water works Committee figured out that by giving the whole contract to the American firm they could effect a saving of $572. A majority of the Committee accordingly decided to recommend the Council to adopt this course. Ald. Dodds very properly protested against the injustice which such action would entail upon the Canadian tenderers, and pointed out that by giving the contract for 60 inch pipe to the Canadian firm and the contract for the 48 inch pipe to the American company, the saving would amount to $1472 instead of $572, and in addition justice would be done home interests. As the result of these representations and the vigorous defence of the rights of Canadian manufacturers and workmen, the former recommendation of the Committee was referred back for further consideration. We trust that the good example set by the aldermen who thus championed Canadian rights and interests as against those of foreigners, will not be lost upon the community, but will extend to other public bodies as well as private individuals. It should be the duty as well as the privilege of every one calling himself a Canadian to assist in every way possible in the upbuilding of Canadian interests. The country which affords men wealth is entitled to receive the benefit of the expenditure of that wealth.

SINCE the publication of the May number of this journal, the ratepayers of Toronto have voted the additional $600,000 required to complete the new municipal buildings. In this we believe they have acted wisely. It is a matter for regret, however, that the Court House Committee is seeking to violate one of the most important pledges made to the public when the money by-law was submitted to them, viz., that a commission composed of men in whose ability and integrity the citizens would have confidence would be appointed to supervise the erection of the buildings. It was this distinct pledge, given over the signatures of the Mayor and the chairman of the Court House Committee, which induced many persons to vote for the granting of the money. The action of the Committee in thus breaking faith with the citizens, is dishonorable in the extreme, and especially so in view of the absence of the Mayor, who is at present in Europe. It is due to the chairman of the Committee to say that he is doing everything in his power to secure the carrying out of the promise made to the citizens. The construction of a building of such a costly and important character, requiring a number of years for its erection, cannot safely be left in the hands of a committee of aldermen, the membership of which is apt to change with every yearly election. The salaries of three competent commissioners for a period of five years should not exceed the sum of thirty or thirty-five thousand dollars. We have no hesitation in saying that many times this amount would be saved to the citizens by a wisely selected commission. Should a committee of the Council be allowed to superintend the work, we may look forward to a period of delays and expensive bungling such as has marked the history of undertakings of this kind in some American cities. The citizens will be justified in taking legal steps if necessary to forbid the commencement of the work until such time as a commission shall have been appointed to superintend the same.

THE question of the relative merits of various methods and materials for paving our city streets, which is at present occupying considerable attention, is one of very great importance. In the city of Toronto an effort has been made to prove that asphalt paving does not give satisfactory results. The weight of evidence appears, however, to be in opposition to this view. Asphalt is in use to a very large extent in London and other English cities, and is giving good satisfaction, as shown by the following extract from a paper read recently by Mr. Geo. R. Strachan, Assoc. M. I. C. E., Eng., before the Society of Engineers at Westminster: "The true principle of road construction was to make the foundation the real road, and the material thereon a wearing surface only. Its use secured economy in construction and maintenance. Roads should be made to suit the vehicle using them, and not the vehicles to suit the road. A concrete foundation six inches thick would carry 600 tons per day without deterioration. It should be constructed carefully, accurately and scientifically, for it is the actual road. Asphalt as a wearing surface was the best in use to-day, as it possessed the advantages of durability, cleanliness, economy and healthiness, which outweighed its slipperiness. When laid 2½ inches thick it gives a life of fifteen years in Cheapside, at a cost of 13s. per square yard. The first cost of such a road 36 feet wide equaled £12,788 per mile, and the average annual cost for repairs equaled £528 per mile. The asphalt could be renewed at half the original cost, and a life of fifteen years was again before it." Jarvis street, Toronto, is to be paved with asphalt at a cost of $2.80 per square yard, the company doing the work guaranteeing to keep the same in repair for five years. Taking into account this guarantee, the length of time which asphalt will wear, the possibility of renewing it at half the original cost when the surface has become worn, together with its noiselessness and the saving in wear and tear resulting from its use, it cannot be regarded as very expensive compared with other kinds of roadways whose sole advantage lies in their first cost.

COMPETITION, if not carried too far, is certainly the life of trade. It tends to stimulate production and consumption. The public interest is apt to suffer when any one firm or company succeeds in obtaining control of the supply of a particular class of goods or materials in general use throughout the country. A number of roofing firms in the city of Toronto are complaining of the disadvantage at which they are placed by the Rockland Slate Company of Quebec. This company, it is said, have agreed to limit the sale of their slate in Toronto to four or five firms, with the object we presume of keeping prices up to a point that will insure continuance of the handsome profits which the company are understood to be making. Those dealers who are so unfortunate as not to be members of the "ring," are compelled to purchase their supplies from United States quarries, and pay therenn the import duty of 80 cents per square. This, as we have said, places them at a serious disadvantage as compared with their competitors who are supplied by the Canadian quarry.

The demand for roofing slate has increased very rapidly within the last five years, with the result that the Rockland Company find it impossible to supply the market. In view of this and of the large quantities of slate imported every year from the United States, there seems to be every reasonable prospect of success awaiting the individual or company who shall undertake to operate a second Canadian quarry. Indeed, we learn that such a quarry has been already opened, but owing to the death of the gentleman who intended to develop it, has remained inoperative for four or five years. This quarry is located at Melbourne, Que., on the same vein of slate and in close proximity to the quarry operated by the Rockland Company. It was opened some years ago by Mr. Benjamin Walton, of Toronto, who spent a large sum of money upon it, and had almost completed the formation of a company, with ample capital for its further development and operation, when he was suddenly stricken down by illness and died within a fortnight, leaving the enterprise in an uncompleted state, in which it has remained until the present. An expert engaged by Mr. Walton to examine and report upon this quarry, states that the supply of slate which it contains is practically inexhaustible, and that in addition, the thirteen hundred acres of land comprising the property is rich in asbestos and minerals. The quarrying machinery with which Mr. Walton intended to operate the quarry is still on the ground, together with a number of workmen's cottages. We are given to understand that the executors of the Walton estate, not being in a position to operate the quarry themselves, would dispose of it at a low figure, and that a company with twenty or twenty-five thousand dollars capital and the necessary knowledge of the business would find in it a profitable field for their money and energy. The shipping facilities are of the best, a branch of the Grand Trunk Railway running into the premises. In view of what has already been stated, we certainly think that such an opening for business enterprise is by no means frequent in this country, and should early be taken advantage of.

HOW TO ESTIMATE.

By "Cato."

THERE are few Canadian builders in the habit of submitting tenders for work and materials, who have not frequently been surprised at the difference in the sums total of all those sent in, and at a loss to account for it. Enquiry into this has developed that it can be attributed to various causes, which cannot be enumerated here, but are responsible for the difference in bids. They regulate to a certain extent the way in which the estimator figures on each detail, that is, if he go through the arithmetical operation correctly, which is not always done, for there are many no doubt who, on reading this article, will remember a loss or perhaps lucky gain through an error of this kind, or through pricing approximately.

However, should each competitor calculate each separate item correctly, then the discrepancy is likely due to the facilities which one or the other possesses or is lacking in, giving an advantage or incurring extra expense, as the case may be. For instance, supposing several builders are invited to tender for the labor and materials necessary to construct a given building, each should individually make a thorough examination of the plans and specifications, to become perfectly acquainted with their conditions and requirements before making out the bill of materials. When satisfied that the whole details are understood, the bill of material is made out, commencing at the staking out and excavation, including all necessary plant (if any should be required for same) and labor; and proceeding methodically with each detail in its order to the end of the specifications.

Inexperienced estimators do this in a general way, and often omit many small details which, though apparently trivial, add to and are a factor in the entire cost. Some allow a margin for contingencies to cover these, but it is better to calculate their true price and put it in the estimate so that their real cost may be at any time found after completion, and for future reference. Experienced builders have, of course, experience to guide them in matters of this kind, and will act up to it.

When the bill is made out, before affixing prices to each item, the builder ought to carefully examine his stock, resources, and facilities of working, in order that he may utilize all to the best advantage, to determine what in stock he can employ, and what must be obtained; to enquire into supernumeraries' as digger, painter, plumber etc.) prices, and to systematically make all provision that in case the contract be awarded him, the work can be pushed ahead rapidly and economically. He should also be of sufficient business capacity to buy all materials profitably.

To the difference in resources, etc., the difference in bids may be often attributed, for it is rarely two bidders possess the same. One may be the possessor of a fully equipped mill of machinery, while his competitor must go to another's mill for stuff and pay the millman's profit. Another can buy for cash, saving discount, or on better terms than his rival. The next can work his men to better advantage or on better terms than his rival, and so on as the conditions vary, but one thing is necessary to all, that is, to know how to estimate on established rules. It is to enable all interested in this important factor in building that the following is submitted:

EXCAVATION.

As stated in the "Canadian Contractor's Hand-Book, builders find the cost of excavating or digging out cellars and for foundations at a given convenient quantity, namely, the cubic yard, one of which composed of common earth is termed a load. The common practice, when it is required to find the exact amount which must be removed to form any cellar, is to calculate by the cubic yard price per same. If the ground be level or nearly so, and the building a simple rectangle in plan, the easy process on page 91 of the "Hand Book" need only be worked out.

The rule is: Multiply one side by itself for a square, or one side and end together for a rectangle, and the result by the intended depth. This will give the result in cubic feet, which must be divided by 27 to obtain cubic yards, thus—

$30 \times 20 \times 9 = 5,400$ cubic feet.
$5,400 \div 27 = 200$ cubic yards,

which in its turn must be multiplied by the current price, say 25 cts.—$200 \times 25 = \$50$—the whole cost of digging out, placing adjacent to, yet clear of building. Prices vary for the different materials to be excavated; for instance, vegetable earth will cost less per yard, gravel more than clay, while rock, which will require a large expenditure of time, will cost four times as much.

OWEN SOUND.

(Correspondence of the Canadian Architect and Builder.)

PLANS are now prepared for the proposed alterations and additions to the town hall here. There will be a gallery with a seating capacity of 325, and body of hall will seat 450. Proscenium arch will be 30 feet wide by 18 feet high. Stage will be 32 feet deep from curtain line, and will have four large dressing rooms. The building will have four exits—two for general use and two in case of fire—and will cost about $7,000.

Plans are under way for a Sunday School addition to St. George's Church, size 75 x 35 feet, grey limestone, rock faced, slate roof, etc. Cost about $4,000.

Ward school, 6 rooms, brick, with stone trimmings, cost about $6,000; pair of semi-detached dwellings, 2 story, brick, 8 rooms and bath, R. E. Todd, owner; additions to residence of A. E. L. Malone, cost about $1,100. Several small dwellings costing about $1,200 to $1,500 have been let within the month, but work has been kept back owing to the want of brick.

The Polson Co. are now laying the keel of the new steel barge for the Parry Sound Lumber Co., and will soon commence laying keel for the new ferry for Windsor. Work on the steamships Manitoba, lately launched by this Co., is being pushed rapidly forward.

OTTAWA.

(Correspondence of the Canadian Architect and Builder.)

THE readers of your journal must have been pleased with the enlarged appearance and corresponding amount of interesting reading matter in the last issue. With proper encouragement there is no reason why the journal should not before long equal any of the architectural publications in the United States.

The contractors of this city held a meeting a few weeks ago, with the object of forming a Contractors' Association. A committee was appointed to draft by-laws and a constitution for the government of the same. Another general meeting is called for to-night, when it is expected the Association will be formed and the election of officers take place. The contractors have come to the conclusion that the time has arrived to form such an Association for their own protection, and we wish them every success in their undertaking.

The Architects' Association meet regularly and I understand have lately been engaged in drafting an uniform contract to be adopted by the Association in all building operations.

The City Council propose erecting a new fire station in Dalhousie ward. Architect Bowes has called for tenders for the same.

The building by-law which has been before the Council for several months has not been taken up lately, and the general belief is that it will fall through, although it has cost the city several thousand dollars to get it into its present shape. Until the by-law is adopted, it will be impossible to give a correct report of building operations, as no record is kept in the city hall.

The master plumbers have drawn up a by-law governing the plumbing in the city, and have submitted it to a committee of the City Council, but so far very little has been done with it. The Secretary of the Architects' Association has addressed a letter to the City Clerk, requesting that the Plumbers' By-Law, and all other matters in which the architects and builders are interested, should be submitted to the Association before being adopted. This is one of the advantages to be gained by the architects being united. In many ways their Association can exert an advantageous influence over the future growth of the city.

Building operations have been greatly retarded by the constant rain the past month. In outside work not more than ten days have been made the past three weeks.

The corporation have advertised in several papers for the building,

equipment and running of a new line of street railway, but up to the present time have been unable to receive any offers outside of the city, and as these have not been considered satisfactory, the matter remains in abeyance, to the great detriment of the city.

HAMILTON.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

THE building prospects in this city for the season are fairly good, although it must be said that so far there has not been as much work contracted for as was expected. However, the season is not far advanced yet, and as there is now perfect harmony among the building fraternity, it is reasonable to expect that a fair record can be shown at the close of the season.

Mr. Landers from Toronto, is entering largely into speculative building here and has already completed a number of very fine detached brick residences in the east end of the city.

The City Hall is fast approaching completion.

The contract for the Young Men's Christian Association building on James Street south, is let to Isaih Derr, who will push on the work with his accustomed energy.

After all the excitement about the choice of a site for the new library building it is now to be built on James Street south, next the new Y. M. C. A. building.

There is to be a new Presbyterian Church erected on the corner of King and Emerald streets, for which competition plans will be invited.

In the matter of architects competition plans on committee invitation, much has to be considered. If the committee desire to avail themselves of a large field of design to select from, prepared by duly qualified architects, they certainly must give the assurance that there will be none of the prejudice or favor shewn that has heretofore marred such competitions, and their premium for the 2nd and 3rd designs must be sufficient to induce competitors to devote the required time and attention to prepare their designs, otherwise only those having influence at court will deem it worth their time to enter the arena.

MONTREAL.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

MONTREAL SEWERS—CONTRACT VS. DAY WORK.

WHETHER our sewers should be constructed by public tender, or done under the Road Department by day's work, has been of late a very vexed question both with the Road Committee and the Montreal contractors.

It has been decided by the Road Committee and Council, reconsidered by that body, and again carried in favor of "day's work," much to the disgust of the contractors.

To our mind, the question is one in which every property owner is deeply interested, especially when we hear one of our "city fathers" say that "75 or 80 per cent. of the sewers constructed under contract are defective." Such a state of things should not exist (if it does) no matter whether the work was done by contract or by day's work. The responsible parties, whoever they may be, should be called upon to render an account of their stewardship.

The sewers are supposed to be constructed by or under the supervision of the Road Department. Our City Surveyor, who is considered a competent one, should be made responsible to the Council for all work done under his department. He has under him a Depuity City Surveyor and Assistant Engineer and some five or six subordinates, and in addition, an Inspector, paid by the city, is supposed to be daily on the works to see their orders carried out to the letter of the specification. If the specifications are honestly carried out we have no cause for complaint; if this is not done, then certainly some one is at fault, and it would be *apropos* of the Council to sift the matter to the bottom and discover if any of our sewers are faulty in construction, and let us know who the guilty parties are, in order that a remedy may be applied. We will point out in your next issue where in our opinion the defect is, and how it can be remedied.

Looking at the question from a financial point of view, while we would not favor all departmental work being carried out by contract, yet we consider that under ordinary circumstances our sewers can be constructed cheaper and equally as good by contract as by day's work. If so, the people called upon to pay for sewers are justly entitled to this benefit.

It would be interesting to engineers, contractors and the public generally, to have a comparative statement of the cost of sewers actually constructed by day's work and those constructed by contract. No doubt such will be forthcoming ere the present season closes, when we shall endeavor to furnish your readers with a copy.

MONTREAL'S GAS.

Citizens generally are complaining that their gas bills, instead of decreasing with the red, price of gas, the most improved appliances and other latest additions to their staff, are still rapidly increasing.

We all expected that when the new "Gas Engineer" arrived from England something would be done to remedy the numerous complaints. There is, however, no noticeable improvement in the gas, and did we not see it in the press, we would not know that the Company had added to their staff a "Gas Engineer." Some consumers explain the increased gas bills as being necessary to pay the extra expense incurred in employing this new official. At all events, our gas bills are no smaller now than they were when gas was half a dollar per thousand feet more:

The gas light flickers dim and low
And meagre is the flame,
But the meter with its measured click
Will get there just the same.

CITY HALL NOTES.

The city corporation have begun the paving of Craig street with wooden blocks, much to the satisfaction of those owning property and doing business on this important thoroughfare.

A regulation is expected shortly in favor of broad tires for heavy carts.

WATER SUPERINTENDENT.

Mr. B. D. McConnell, late Assistant Superintendent, has, after considerable wrangling in the Council, been elected to fill the position of Superintendent, rendered vacant by the death of Louis Lesage.

The new Superintendent has been Deputy Superintendent for the past twelve years, and it is considered that the Council have acted wisely and in the best interests of the city by promoting him to the position of Superintendent.

Some six applications for the position of Assistant Superintendent have been received, amongst them one from Mr. T. Lesage, son of the late Superintendent. We understand that all the candidates are not Civil Engineers, some being only Mechanical Engineers. It is to be hoped the Council will take this question into consideration, and appoint only a qualified Civil Engineer to assist the Superintendent, as a Mechanical Engineer would be of little or no use in preparing the plans and surveys required by this department for the amelioration of the water works, and as the Superintendent's own time will be fully taken up with more important matters connected with his department, he could not be expected to do the surveying and other field work himself; therefore he should by all means be given a qualified assistant.

HARBOR IMPROVEMENTS.

The plan prepared by Messrs. Kennedy & St. George, Harbor and City Engineers respectively, better known as plan "number 6" has now been approved of, and the means for carrying it into effect will very shortly be decided upon.

BUILDING NOTES.

While the building business is not quite so brisk as it was this time last year, yet most of the offices are kept as busy as ever. There is every probability that before the close of the year there will be as many private houses erected this year as last, although the total expenditure can hardly be expected to reach as much as last year, when the New York Life and Imperial Insurance Companies' buildings, and the Canadian Pacific and Grand Trunk Railway depots were under construction.

During the month of April, sixty-four permits have been issued from the Building inspector's office for houses, varying from $1,600 to $13,000. The principal buildings now in course of construction are a block of houses for Sir Donald A. Smith, the new lighting station for the Royal Electric Company on Water street, a branch of the Bank of Montreal on St. Catherine street, a residence for R. G. Reed, contractor, Drummond street, a store and two dwellings, for H. F. Jackson, chemist, on St. Catherine street, a manse for St. Paul's Church, Dorchester street, a block of flats for R. Fisher on Sherbrooke street, something after the New York style, a manse for the Methodist Church on Sherbrooke street, Royal Insurance building on Notre Dame street, a racket court on Concord street, five houses on Manse street, and four houses on St. Matthew street.

Preparations for the widening of St. Lawrence Main Street have commenced, and already several of the buildings have been demolished, and the owners are making arrangements for the construction of substantial and handsome stores on their new lines. This will make St. Lawrence Main Street one of the finest business streets of the city.

FAULTY CONSTRUCTION.

The large new brick building on St. James Street West, recently erected for Messrs. Roland Bros. at a cost of some $25,000, has just been condemned by the Building Inspector as being unsafe and dangerous, and is now being demolished. The building was just about completed and ready for occupation, when the defects were noticed. We understand an amicable arrangement has been arrived at between the contractors and owners by which the contractors are to rebuild same on the condition that the owners do not claim damages from contractors.

REAL ESTATE.

During the month of April there were some two hundred and fifteen real estate transfers in the city wards, and Cote St. Antoine, amounting to $731,393.52 for which St. Antoine ward alone contributed $246,527.70.

Real estate generally is in good demand and one finds great difficulty in getting a choice lot in a good locality at any price.

The old established hardware firm of Rice, Lewis & Son, Toronto, has been incorporated.

A Belgian firm who propose to engage in the manufacture of iron water pipes at Three Rivers, Que., have been granted by the municipality a bonus of $20,000, fifteen acres of land, and exemption from taxation. A large number of hands will be employed.

IMPORTANT JUDICIAL DECISION ON A MECHANICS' LIEN.

BELOW will be found a judgment by the Honorable Mr. Justice Rose delivered 27th April, 1889, while holding the Toronto Assizes. As will be seen this was an action by a sub-contractor who had delivered lumber for building some houses, to a contractor.

The whole amount of the contract was $4,775 but when the contractor had done work to the extent of $2,300 he gave up the job and the owner had to take the work off his hands, and when the house was completed the owner had expended the full amount of the first contract price, viz.: $4,775 and $90 in addition.

The plaintiffs claim that they were entitled to ten per cent. of the $2,300, notwithstanding the fact that the owner had paid more than the original contract price to finish the houses. The Judge, after some considerable care which he had given to the case, decided, but not without some hesitancy, to dismiss the action with costs, and therefore the sub-contractor did not succeed in his action.

JUDGMENT.—"This is an action by mechanic lien-holders who had supplied material to a contractor doing work on the lands of the defendant for the amount of their claim, or at any rate for 10 per cent. of the amount of the work done by the contractor. The original contract was for $4,775. The contractor, after doing work to the extent of about $2,300 refused to go on with the work. Thereupon the owner of the premises employed another to finish the work, and the work was completed at an expense of some $90 in excess of the original contract price. The question for consideration and determination, is whether or not the owner of the land was bound to retain 10 per cent. of the value of the work done from time to time, thus making payments only up to 90 per cent. of the price to be paid for such work, or whether he was only bound to retain 10 per cent. of the price to be paid for the work as per the contract, on the supposition that the contract would be completed. In other words, does the Mechanics' Lien Act contemplate the retention of 10 per cent. of the price to be paid for the work as the work progresses, so that if the contract is not completed there will remain in hand from time to time 10 per cent. of the price of the work done, or does it contemplate solely the case of a contract being completed and the prices to be earned under that contract? There are three principles that seem to me to require consideration as exhibited by the Act. The first is, the payments up to 90 per cent. to be paid for the work are protected as long as they are made in good faith. Secondly, the lien is restricted to the amount payable by the owner of the property to the contractor or sub-contractor; and third, that the Statute does not contemplate that the owner of the property shall be required to pay a greater sum than the amount payable by him to the contractor. And if the words, 'the prices to be paid for the work' in section 9 of the Act mean prices to be paid for the work under the contract, then I think we have gone a long distance in support of the contention of the defendant. I am met with some difficulty by reason of what I think is possibly the direct conflict of authority in the cases of Re Cornish in 6 Ont. 259, a judgment of the Chancery Division, and Godard v Coulson, 10 App. Rept., s. 1. Each of these cases may be distinct from the case before us by microscopical examination, but I think the fair reading of the decision in these cases shows they are inconsistent and conflicting. In Re Cornish the court had not before it the argument that the 10 per cent. was only upon the price of the whole contract when the work was done. There were three propositions laid before the court, but they all looked towards the principle that the owner of the property was bound to retain 10 per cent. of the price of the work. The chief conflict there, was whether the 10 per cent. was to be on the whole contract prices, or whether it was to be on the prices of the work already done. The court held in that case that the contract was divisible, that the part of the price earned by the man who had done the work up to a certain date was one contract price, and that the price earned by the man who was employed to complete the contract was another price, and it was the duty of the owner of the property to retain 10 per cent. upon each of these sums, such 10 per cent. to be available to those who can claim under the Mechanics' Lien Act. In Godard v Coulson, an appeal from the judgment of the County Court, the Judges who gave judgment held that the price to be paid was the price to be paid under the contract; that the Statute looked alone to the case of a contract completed and a price earned under that contract; and in the case of the price of the work already done having been paid at the time that the contractor abandoned his work, it was held that there was no further sum coming to him, that such payments made in good faith were protected by sec. 9, and that the person claiming under the Mechanics' Lien Act failed because he was unable to show that the contractor had completed his work and earned his money under the contract. If the principle of Re Cornish had been observed in Godard v Coulson, it would have been held that the 10 per cent. should have been retained with respect to the work already done, and that the plaintiff in that case was entitled to have his judgment for such an amount. I think I must follow the Appellate tribunal, although I am not sure exactly which authority is the binding authority, the one being an appeal from the judgment of the County Court, not to the Court of Appeal as such, but to members of the Court of Appeal constituting a Court of Appeal for the hearing of such a decision, and the other being a judgment of a court of as many members. It may be that I would be at liberty to express my own opinion, and follow whatever decision convinces me of its correctness, but I am glad that I am saved from expressing my own opinion in regard to the matter, and prefer to follow the decision of our appellate tribunal, even although it might successfully be argued that decision was no more binding than the decision of the Divisional Court. I think that in this case the contractor having been paid all that he has earned, and although there was a drawback, that drawback having been exceeded in completing the work, and the result having been thus $90 more were expended in completing the work than the contract price, there never was payable to him in respect to the work more than had been paid in good faith. And as he could not have recovered against the owner of the property for any sum in excess of that paid to him, and as if judgment were to go for the plaintiffs in this action the owner of the property would be required to pay a sum greater than that payable by him to the contractor, I shall follow the principle of the decision in Godard v Coulson, 10 Appeal reports, page 1, and dismiss the action."

STRAIGHTENING WALLS OF BUILDINGS.

THE weight of the roof of the large gallery of the Conservatoire de Arts et Metiers pressed the sides outward so as to endanger the building; and it was requisite to find means by which the wall should be propped so as to sustain the roof. M. Molard contrived the following ingenious plan for the purpose. A series of strong iron bars were carried across the building from wall to wall, passing through holes in the walls, and were secured by nuts on the outside. In this state they would have been sufficient to have prevented the further separation of the walls by the weight of the roof, but it was desirable to restore the walls to their original state by drawing them together. This was effected in the following manner: Alternate bars were heated by lamps fixed beneath them. They expanded, and consequently the nuts, which were previously in contact with the walls, were no longer so. These nuts were then screwed up so as to be again in close contact with the walls. The lamps were withdrawn, and the bars allowed to cool. In cooling they gradually contracted, and resumed their former dimensions; consequently the nuts, pressing against the walls, drew them together through a space equal to that through which they had been screwed up. Meanwhile the intermediate bars were heated and expanded, and the nuts screwed up as before. The lamps being again withdrawn, they contracted in cooling, and the walls were further drawn together. This process was continually repeated, until at length the walls were restored to their perpendicular position. The gallery may still be seen with the bars extending across it and binding together its walls.

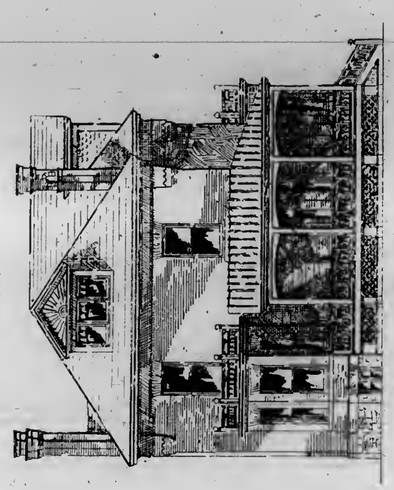
SCHOOLROOM SPACE.

MR. H. COURTHOPE BOWEN, whose opinions on all matters connected with the proper construction of schoolrooms are entitled to great weight, and are regarded as authority by the leading medical journal of England, expresses somewhat as follows what, in his judgment, should be considered a good schoolroom. Taking the case of a room 14 feet high, fairly ventilated and always well aired in the recess, he should assign two-thirds of the floor-space to the scholars and their desks, and keep the other third for the teacher, the blackboard, etc. With single desks, twenty-two inches should be allowed from side to side, and three feet from back to front, for each scholar. The passages need not be more than eighteen inches for those running from back to front, and one foot for those running from side to side. In such arrangement, counting the passages, each scholar has (without reckoning the share of the space allotted to the teacher) a trifle more than forty inches from side to side, and just four feet from back to front. In a room twenty-five feet by twenty feet, the floor-space for scholars' desks will be sixteen feet by twenty feet, with four feet from back to front per row, and accommodation is provided for twenty scholars. The whole floor-space is 500 square feet, and the cubic contents of the room 7,000 cubic feet, with twenty square feet and 280 cubic feet per person.—*Science.*

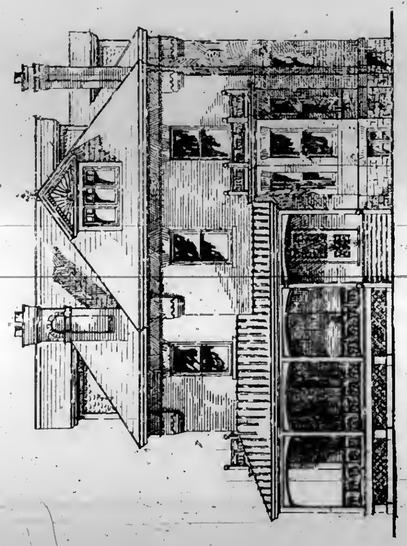
HOW TO SAVE CRACKED CEILINGS.

A CORRESPONDENT in the *Scientific American* gives the following remedy: The ceiling must be pressed back firmly into place. To do this, take two pieces of scantling, long enough to reach over the defective part. Place this framework, lath side up, against the ceiling, driving wedges under the floor end of the supporting scantling, which will bring the ceiling in place and keep it there.

To prepare the nails: Put them in a vise. With a hack saw, saw slots in their heads like a screw (only slightly, but so that a sharp screwdriver will hold in the groove), then with the screwdriver turn the nail to the right and then to left, gently pushing it, first through the plastering, then into the lath above, still pushing and gently turning. The head of the nail can be screwed into the plaster flush, so as to make a neat job, and hardly be noticeable on the floor beneath. The nails hold very firmly. Once in every 6, 8, or 10 inches square for a nail is usually sufficient. If the plaster is very porous and shaky, small copper washers may be used on the nails, but it must be very far gone to need them. Driving nails in with a hammer would destroy the whole fabric. Take down your lath framework, and there you have your piece of ceiling as firm and nice as ever it was.

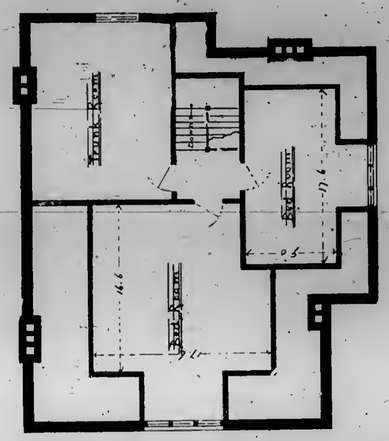


SOUTH ELEVATION.

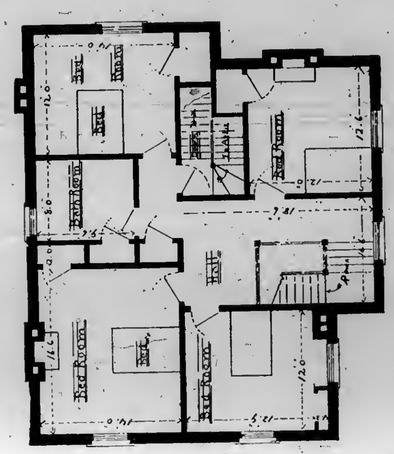


EAST ELEVATION

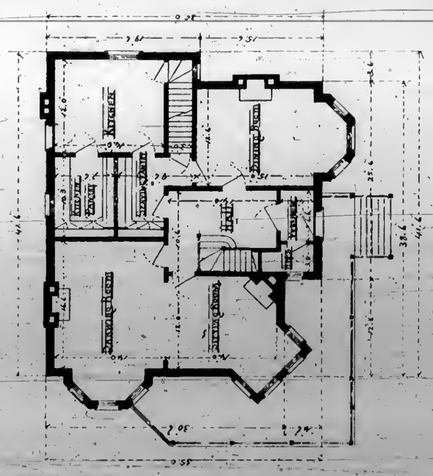
Scale, 8 ft. to an inch.



ATTIC PLAN.

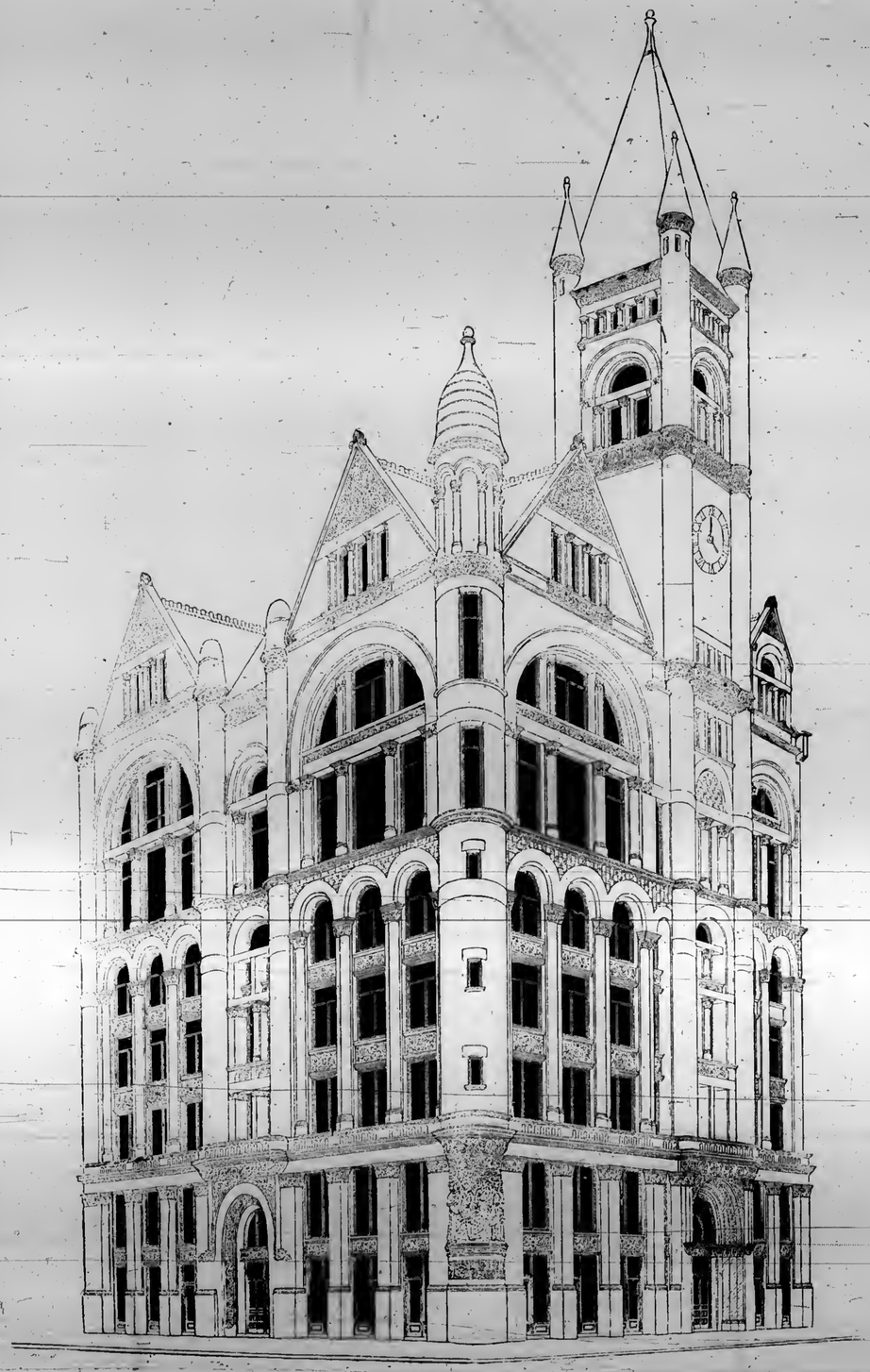


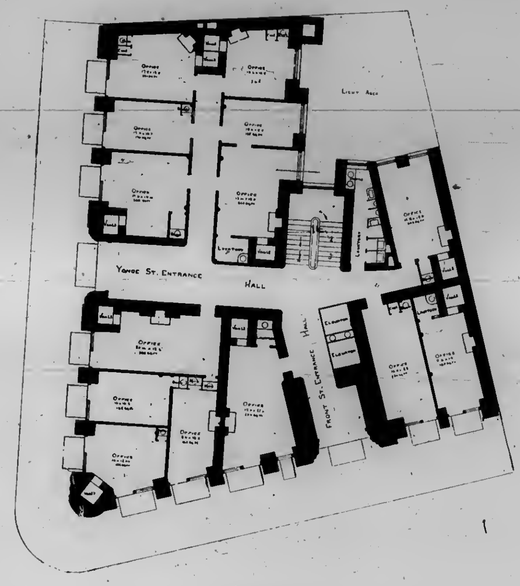
FIRST FLOOR PLAN.



GROUND FLOOR PLAN.

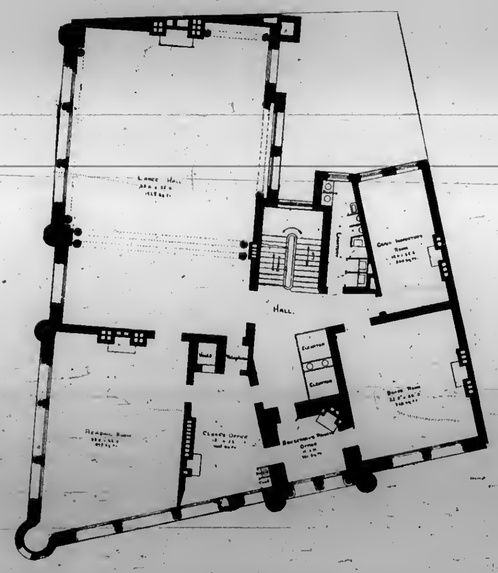
DESIGN FOR HOUSE OF MODERATE COST.—DARLING & CURRY, ARCHITECTS, TORONTO.





GROUND PLAN.

4th FLOOR PLAN.
(First, Second and Third Floors similar).



5th FLOOR PLAN.

COMPETITIVE DESIGN FOR NEW TORONTO BOARD OF TRADE BUILDING.
MESSRS. GORDON & HELLIWELL, ARCHITECTS, TORONTO.

ONTARIO ASSOCIATION OF ARCHITECTS.

A MEETING of the Board of Directors of the Ontario Association of Architects will be held at Toronto on Wednesday, the 19th inst., to arrange a programme for the annual meeting of the Association in November next. It is hoped that every Director will make it a point to attend this meeting, and by his counsel assist the objects to be promoted.

OUR ILLUSTRATIONS.

PHOTOGRAVURE PLATE—NEW DEPARTMENTAL BUILDINGS, OTTAWA, ONT.—THOS. FULLER, R. C. A., ARCHITECT, PUBLIC WORKS DEPARTMENT, OTTAWA.

COMPETITIVE DESIGN FOR NEW TORONTO BOARD OF TRADE BUILDING.—MESSRS. GORDON & HELLIWELL, ARCHITECTS, TORONTO.

DESIGN FOR HOUSE OF MODERATE COST—MESSRS. DARLING & CURRY, ARCHITECTS, TORONTO.

OUTSIDE TESTIMONY.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—I have read with interest the letter written by "Protection of all Interests" and there is doubtless reason for complaint about the way in which some Canadian competitions have been managed lately, but to advise all young men of ability with whom he comes into contact to emigrate to the States, is just about as wise as the elder Weller's decision to "keep a pike." I could give P. O. A. I. an eye opener as to competition decisions in the States, and also an instance of young men of ability having a rough and tumble time after arriving in the land of Washington. The architectural pilgrim would find the same evil here—for often enough designs of architects from other States will be selected in preference to those of superior merit executed by local parties. The whole thing resolves itself into a question as to whether the aforesaid young men should "endure the ills they have or fly to others they know not of."

Yours,

C. G. M.,

Columbus, O.

QUERIES AND ANSWERS.

(No. 6.)—Will you please advise me what styles of plaster finish are being adopted for drawing rooms, sitting rooms, and libraries of small houses? Is the rough finish adopted in some large buildings used at all for private houses, and for small rooms, and do you think such would be desirable?

Yours truly,

J. WIDMER NELLES.

[We do not consider the rough finish suitable for private houses. It is open to strong objection on the ground of cleanliness. It is used but little, if at all, in Toronto, preference being given to the hard, smooth plaster surface.—THE EDITOR.]

(Reply to No. 5.)—There is no definite law laid down as to what part of a room the vitiated air should be removed from. Some maintain that it should be removed at the ceiling, others at the floor, and both are positive that they are right. The method of heating determines to a very large extent the point at which the foul air should be removed. If a room is warmed on the indirect principle, and fresh, warm air is brought into the room at either the floor or ceiling, it will escape by an opening at the ceiling without warming the room or purifying the air. The warm, fresh air, being lighter than that in the room, will pass across the ceiling to the outlet and escape. If the outlet is at the floor, the fresh air will displace that already in the room, although the ventilation from the floor may not work as satisfactoilry as could be desired. Air escapes by cracks in a room, if it does not by the way provided for it, and so long as fresh air is entering the room the air in the room cannot become injurious. Ventilation openings should be placed where circumstances may require. They certainly cannot be placed at the ceiling, or the floor, or between the floor and the ceiling, under any rule which will not have any number of exceptions. My advice to "Student" is to read a sufficient number of works on ventilation to thoroughly understand the question. It is not safe to accept the opinion of any one person on a matter so important, more especially the opinion of one who can decide so important a matter without consideration of minor, but very often most important points.

JULY.

CANADIAN CHURCH ARCHITECTURE.

WE notice that a committee of the Anglican Synod brought in a report on church architecture. They deplored the fact that many of their churches were being erected according to very inferior designs. Any one who knows good from bad architecture will agree with them, but we do not believe that the cause which they ascribe is to blame for all the inferior architecture. It is well enough to ascribe to local causes and poor circumstances some of the bad work, but the real trouble is, that to a very large extent, the clergy and the people do not know good church work from bad. In Toronto the Church of England is building a Cathedral Church according to a design which, to say the least, is very weak. There is one thing of which we are positive, that the building will not be a fair exponent of the condition of architecture in this province. There are men in Canada who have the talent necessary to design a good Gothic church, and when a design is being carried out which is not by any means the best, or even the second best that could have been obtained, there is cause for much dissatisfaction with, if not condemnation of, those who had charge of the construction of so important a building.

PUBLICATIONS.

WE are indebted to the City Engineer of Toronto for a copy in pamphlet form of the report of Messrs. Hering & Gray on the methods which should be adopted to increase the city water supply. The report is accompanied by diagrams illustrative of the scheme as recommended by the experts.

We have received from Mr. Geo. F. Bostwick, Toronto, manufacturer of Amberg's Cabinet Letter Files, a copy of his handsome new catalogue, containing numerous Canadian testimonials regarding the merits of his labor-saving office device.

The Hibbard Electric Manufacturing and Supply Co., of Montreal, have favored us with a copy of their new trade catalogue.

NEW BRUNSWICK GRANITE.

THE granite business is destined to be a very important one in this province says the St. John *Sun*. There is at St. George a mountain of red granite of the best quality in the world. Builders throughout the United States are unanimous as to its superiority over the Scotch granite. Then the grey granite got at Spoon Island is of the very best quality. Several firms are engaged in the business at St. George. The extensive works of the New Brunswick Red Granite Company at Carleton present just now an exceptionally busy scene. These works were erected in 1877, and for the first two or three years gave employment to about 30 men. The business has increased wonderfully since then and at the present time 100 men are employed there. This company manufacture all descriptions of materials for building purposes, and have turned out some of the finest pillars used in many of the large buildings in the United States. They also do a great deal of panelling work for buildings. At present the company are furnishing the granite for two large buildings in New York—one of which is being erected in Central Park. Fully 5,000 tons of granite will be required for this purpose. The company have a large quarry at St. George, where they obtain their red granite, and another at Spoon Island, where the grey is procured. About forty men are given employment at the quarries and the company's wages exceeds $4,500 per month. The granite when polished, etc., is shipped to the upper provinces and the United States, about one-half of the product being sold in Canada.

PERSONALS.

Mr. Richard West, a well-known Toronto contractor, with his family sailed by the Circassian a few days ago on a three months' tour to Europe.

At the last meeting of the Royal Colonial Institute, in London, Mr. Sanford Fleming was appointed honorary corresponding secretary of the Institute at Ottawa owing to the resignation of Dr. Bourinot.

Arthur Mussy, civil engineer, of Paris, and a relative of President Carnot, who came to Canada to inspect the beet-sugar refineries in the interest of French capitalists, is reported to have been drowned May 20, while bathing near Montreal.

SANITATION AND LIGHT

NOW that the question of putting all electric wires underground is being agitated in Toronto and other Canadian cities, it is well to look into the matter carefully, and ask; 1st. What is the cause of the agitation on the subject? 2nd. Is it possible to work all electric wires underground successfully? 3rd. Is it possible to attain the end sought by any other method than by burying the wires?

It is hardly necessary to discuss the first question at any great length, as it is now quite generally known that overhead electric light wires of any description are believed by the general public to be a source of imminent danger to life and property, and as far as telephone, telegraph, fire alarm, and other low tension wires are concerned, they, and the poles that carry them, are simply looked upon as a disfigurement to the streets, and hence the removal and burial of all electric wires is being demanded by civic authorities.

As regards the second question, it has been demonstrated by practical experience that it is quite practicable to work telegraph, telephone, fire alarm, and other low tension wires underground successfully, and in order to demonstrate this fact, we have only to look at the experience of New York, Chicago, Philadelphia, Boston, Detroit, Buffalo, London, England, and others of the larger cities, the authorities of all of which unanimously agree that the question of placing of such wires underground has now been practically solved, and that outside of the expense and the inconvenience caused by the opening up of the streets, there is no reason why overhead wires and poles of this description should not be immediately removed. In regard to wires carrying low tension currents for incandescent lighting, it has been found that they will work fully as well underground as overhead, provided that the very best of insulation is used, and that the details of the work are carefully carried out under the direct supervision of a skilled expert. There is, however, at least one difficulty to be surmounted in the burial of incandescent electric light wires, and that is the question of house to house or general distribution of the current from the main conduit or leads. This is generally accomplished by branching of wires from the manholes in the streets to the subscriber's premises, necessitating the frequent tearing up of the pavements and a portion of the streets, which is of itself fully as great, if not a greater source of danger and inconvenience than an ordinary pole line. In regard to wires carrying high tension currents of 1000 volts or more for arc lighting, and for the alternating system of incandescent lighting, although there are many places where such wires are at present working underground, still the expense of keeping them in proper working order is found to be such that the companies operating them have either to double their rates or else withdraw from the business altogether. It is true that the civic authorities in New York city are at present forcing all the companies to bury their wires, but what is the result? Gas explosions in the conduits are of frequent occurrence, workmen are instantly killed while working in the man-holes, and the lighting service generally is poor and unreliable.

Now let us consider the third question. With regard to the telephone wires, their number is increasing so rapidly and their underground working has proved so successful, that there is little doubt but that they will all have to go underground ultimately. Almost the same may be said of telegraph, fire alarm, and low tension electric light wires, but when it comes to the high tension arc light wires the case is entirely different, and the companies operating arc lights and alternating system incandescent lights, have certainly excellent reasons for fighting the movement to compel them to bury their wires. If these companies were to adopt the underground system in the Canadian cities (where high tension stations are operated on a much closer margin of profit than in the American cities where the field is larger), they would be compelled to at least double their rates, and the question here arises as to whether the ends gained by burying the wires are not more than off-set by the consequent increase in rates and unreliable service rendered. It is not our purpose here to go into details in order to show why the higher tension wires do not work successfully underground, as the reasons are only too well known to the electrical fraternity, but we wish to draw the attention of the authorities of Canadian cities to the fact, that it is perfectly feasible for electric light companies to build pole lines in such a manner that they would be an ornament instead of an eyesore to the streets, and at the same time the danger from accidents would be entirely removed. It does not seem to be recognized by the general public that the liability to accidents from high tension electric light wires is almost entirely due to the fact that the insulation of the wires in general use in Canada is not waterproof, the consequence being that in moist or rainy weather the wires are almost as dangerous as if they were bare, and if a telephone wire (or any other conductor in connection with the earth) comes in contact with them, the deadly current is diverted from its proper course and in all probability will deal death to some unsuspecting individual before the trouble is discovered and removed. Now, there is no necessity whatever for the existence of this state of affairs, as there are any number of makes of wire on the market at present provided with insulated covering that, besides being absolutely water-proof, is so tough and durable that it will stand abrasion for years without cutting through to the wire. It is easily seen that even if wires of this description were to come in contact with other wires, the current would not be diverted from its course, and consequently no harm could possibly result. Of course, in order to build a neat and safe pole line, it is necessary to use nothing but the very best of material, but as the cost of these is but a trifle compared with the expense of burying the wires, it will be found that electric light companies generally would willingly rebuild their pole lines to the satisfaction of the civic expert, if offered this as an alternative to placing their wires underground. These being the actual facts of the case, we contend that by far the wisest course for civic authorities who are dissatisfied with the overhead wires, would be to compel the burial of all low tension wires within a reasonable time, and at the same time compel the companies operating high tension wires to rebuild their overhead lines in a safe and sightly manner, and to allow these companies to operate their overhead lines until such time as some perfectly practical method is discovered for working high tension wires underground as successfully as *low tension.*

Let us now glance at the results of such a policy and we find, that the mass of telephone and telegraph wires (which form by far the largest portion of the overhead system) have entirely disappeared, and in their place we see nothing but a single line of straight neatly painted poles bearing a small number of properly insulated high tension wires securely attached to their supports in such a manner that it impossible for one of them to fall, which indeed would now make little difference, as the insulation is calculated to stand abrasion and handling; and besides, there are now no other wires above ground to get crossed with the high tension. At first glance it may seem absurd to seemingly highly favor the high tension companies, but when we consider the many sweeping objections to the burial of their wires, we cannot but feel that for the present at least, it is to the public interest that all high tension wires of 1000 volts or over should remain above ground, subject to the restrictions enumerated above.—ELECTRICAL, MECHANICAL AND MILLING NEWS.

The by-law to raise $6,000 for the purchase of an electric light plant for the town of Seaforth has been carried.

We are fearful lest the work of temperance reform at London, Ont., should be off-set by the statement that dogs are allowed to swim in the city reservoir.

The condition of the dairies from which milk is supplied to the citizens of Vancouver, B. C., is said to be such as should lead to the appointment of a sanitary inspector.

TORONTO PLUMBING.

THE officials whose duty it is to administer the Toronto Plumbing By-law state that its operation has resulted in a gratifying improvement in the character of plumbing work done throughout the city. About 75 per cent. of the plans submitted for the approval of the Plumbing Inspectors since the by-law came into operation little more than a year ago, have been referred back for necessary changes. Notwithstanding this, up to date more than eleven hundred plans have passed inspection. More than seven hundred of this number have passed during the present year.

Enquiry confirms the opinion expressed in a former number of this journal, that great necessity exists for regular inspection of old plumbing. The only inspection of old work at present is done by the inspectors of the Health Department, and only in cases where complaints are made to the Health Officer by the occupants of the premises. Remembering how indifferent the majority of householders are to the subject of sanitation, we fear that the present method of inspection is by no means as thorough as the public health demands.

If, as we are informed, the plumbing done under the Plumbing By-law is vastly superior to that of former years, we find here an additional argument in favor of regular inspection of the imperfect work done when there was no official inspection, a vast amount of which is still existing.

INTERNAL "EXTENDED SURFACE" IN BOILERS AND RADIATORS.

WE learn from the *Engineering and Building Record* that experiments have been made at the naval arsenal in Best, France, by the officers of the Government with a boiler furnished with tubes having longitudinal ribs on the inside, so as to present a larger surface for the absorption of heat. The projection of the flanges is about one-quarter the diameter of the tube, and eight of them are placed at equal distances around the inner surface. The results gained are said to indicate an economy of 18 to 24 per cent. in the consumption of coal, when compared with the ordinary smooth tubes.

This, however, could hardly be true except in the case of a boiler with insufficient heating surface, as when properly designed and operated a good boiler will abstract as much heat from the gases as may be desired.

For marine boilers, where economy of space is of great importance, this device may be useful in increasing the efficiency of the heating surface.

It also suggests the question whether it may not, in some cases at any rate, be economical to use "extended surface" on the inside as well as on the outside of hot-water radiators.

IMPORTANT SANITARY PROBLEMS.

AMONG the subjects selected for essays to be read at the forthcoming convention of the National Association of Master Plumbers of the United States to be held in Pittsburg, Pa., from the 25th to the 27th inst., are the following: "The best method of obtaining for country houses an abundant supply of pure water"; "Would it be advisable, where supply of water for cities is limited, to encourage the use of water meters; that is, under what circumstances should they be adopted with a view to economy and equitable distribution?" "Taking into account the wonderful progress of electrical science and invention, what prospect is there in the near future of its application to plumbing?" "As a measure of practical utility and economy, should the circulation pipe ever be omitted in fitting up the hot water supply to bath rooms or basins?" "Should not plumbers, from their standpoint as mechanics, adopt and stimulate the hot-water system of heating dwellings or other buildings?" "Is it injurious or otherwise that Boards of Health fail to recognize the experience and mechanical knowledge of the plumber where accurate inspection of intricate details of work is required?" "In view of the fact that the sanitary regulations of municipal bodies are requiring the cast-iron soil-waste and ventilation pipes to be air-tight, is it advisable to resort to the use of wrought-iron pipe and fittings?" "The best methods of putting in pipes in buildings with a view to protection against freezing; also desirable precautions against such pipes being affected injuriously during extremely cold weather. Incidentally, the danger of water-backs of ranges being frozen up"; "The best method of putting cast-iron pipes together to insure duration and non-liability to separation under any and all circumstances"; "What are the conditions under which success in the plumbing business can be best attained?" "The necessity of Plumbers' Associations taking an active interest in promoting beneficial legislation in favor of sanitary regulations within their respective localities"; "Upon what grounds do plumbers base their claim to recognition as authorities on sanitary rules and practice, and why is their advice indispensable?" "The ethics of plumbing; why should not the plumber establish a code similar to that of the profession and thereby enhance his social and moral status?"

Complaints are made that the streets of Ottawa are insufficiently lighted.

Campbellford, Ont., is putting in an electric light plant.

The city of London, Ont., has in view the erection of a garbage crematory.

Port Hope, Ont., is advertising for tenders for lighting the town by electricity.

Buckingham, P. Q., has completed arrangements for putting in electric light in the fall.

The Electric Light By-law voted upon at Stratford, has been carried by a majority of 51 for the light.

The by-law to guarantee 5 per cent. on $40,000 to build an electric street railway in Victoria, B. C., has passed.

The Toronto Local Board of Health is consulting with manufacturers with a view to the abatement of the smoke nuisance.

Through the liberality of an old graduate, a course of instruction in sanitary science will in future be open to the tudents attending McGill University, Montreal.

One of the electrical projects in the air at the present time, says the New York *Electrical Review*, is the problem of heating dwelling houses electrically, without the use of any very hot substance. It is claimed that wall-paper can be made in such a way that the passage of currents of low electro-motive force will heat it moderately warm to the touch, and thus diffuse throughout the room an agreeable temperature. This is, of course, theoretically possible and may even become feasible in the more improved state of the art. A source of warmth coming from the entire surface of a room would certainly be the perfection of house-heating and would do much to make this so-called temperate zone of blizzard's sea blows endurable. Why may not the artificial illumination of the future be of the same nature? Recent developments are tending towards the possibility of infinite subdivision. The charm of a room illuminated with myriads of candles is one never to be forgotten, though it is one which few of the present generation have seen. We predict that the ultimate use of the glow-lamp for domestic purposes will be to diminish its size and increase its number.

STRENGTH OF BENT PIPE.

SOME experiments recently made on the strength of bent pipes have developed some things not commonly known, or, at least, not recognized. We mean the strain on the inside of the angles, due to the effort of the pipes to straighten themselves under pressure. The problem is one of considerable intricacy, resolvable, however, by computation, and is a good one for practice by our engineering students. In the experiment referred to, a copper pipe of 3¼ inches bore, three-sixteenths of an inch thick, was used. The angle was ninety degrees, and the legs about sixteen inches long from the centre. At a pressure of 912 pounds to an inch the deflection of the pipe was nearly three-eighths of an inch, showing an enormous strain on the inner side in addition to the pressure. A steam engine indicator is made in England on this principle. There is a curved pipe employed, and the tendency to straighten under pressure produces the recording movement.

DECORATIONS AND FURNITURE

HARMONY OF COLOR IN NATURE.

NATURE is very sparing of showy contrasts of warm and cold colors. Red and blue are very rare, and of yellow and blue the cases are but few, and black and blue are found in lepidoptera more often than white and blue are seen in our flora or fauna. It is not uncommon for one of two strong colors to be overcast with a tinge of its fellow, or for both of them to be reconciled by a common touch of black or of some third color, or for one of them to be lightened by a dash of white, while the other is lowered by as much black, and so red, off-hued with black—russet and green up-brightened with white—often meet in the autumn in dead and dying patches of fading leaves. It may be shown, I believe, by the refraction of light in chrystalized gypsum that brown is the true complimentary color to lavender gray; and how true to herself is nature we may go forth and see, in the fall of the year, in the dead and curled leaves of the mugwort, or meadow sweet, which are beautiful even in their death, with one side brown and the other the brown matching grey; and, if brambles be cut in the leaf-greeny season, their two surfaces soon wither in harmony of grey and brown.

And what use are we to make of these hues of nature? They are warrants for a grey mantle under locks of brown hair, or a brown bonnet or trimmings, or a grey room wall with brown furniture; and if, in a hot summer's day I see the park leaf-shades playing on the grey bark of a young beech, I can boldly lay darkish leaf shades on a wall of the beech bark's hue; or if, after the winter rains, I find a barkless pole in railings, tinted with the palest blue-grey, and upon breaking off a splinter of it I find its inner wood of the true color pale brown yellow, why should I not take the inner tint for my wall and the outer one for the skirting? Nature is the best school of art, and of schools of art among men, those are the best that are nature's best interpreters.—*The Architect.*

THE IDEA IN ART.

SPEAKING of the "Idea in Art," J. S. Blackie says:

"The value of the Platonic idea may be shown by an illustration from the region of the beautiful. The marble figure which some stone-working poet has baptized a Corinne or a Sappho, and whose features, expression and attitude combine all that is most dignified in a queen, all that is most simple in a shepherdess, all that is most inspired in a poetic thinker, and all that is most attractive in a Venus—this figure, for the possession of which to adorn their museums, the heads of the great monarchies will contend with rival diplomacy and emulous gold, when dashed to pieces by a sudden precipitation, is only so much lime which the farmer can fling upon his land like straw or dung or any other refuse. Its value is gone as soon as it has lost its form; the material is common and worthless. Whence, then, is this form, this species, the superaddition of which imparts so much value to an otherwise trivial material? Whence did it come, and what is it? It is plainly neither more nor less than an image impressed by the plastic power of mind on a material utterly destitute of formative force, and the value of the work consists altogether in the amount of this force, or organizing intellectual energy, which has been made to act upon it from without. But this formative force is a thing altogether bloodless and untangible. Shatter the substance of the finest statue in the world to pieces, and the amount of calcine substance or earthly matter of lime remains the same as before the disintegration. It follows, manifestly, that the only real element in the admired object is that which according to common phraseology has no reality in it, viz., the idea in the mind of the artist which has been transferred to stone. This idea is, in fact, the only thing which truly exists so far as the work of art is concerned. It is the only thing also that possesses permanency; for whereas the marble may be broken at any moment, the idea may at any time be recovered from the intellect of the artist where it was originally generated, and where it permanently resides. That the ideas which belong to genius or original creative power are innate, in the highest Platonic sense of the word, most people will be willing to concede. For, if not, why cannot every eye see in a daisy as much as a Burns or a Woodsworth saw? Why is not the physiognomy of every dog as eloquent and as pregnant with profound expression to me and to you as it was to Landseer? A common observer 'wants the eye' to see in common objects what the great artist sees—that is to say, he wants an internal plastic and organizing force; for it is by this mental force only, and not by mere pupils, corneas, retinas, and other apparatus of mere sensuous vision that the man of genius obtains his superior insight.

HINTS ON INTERIOR DECORATION.

THE occupant of a house called some weeks ago on a master painter to have him look at the dado of his drawing-room, a series of sunk panels in golden brown, which he considered too plain. His idea was—for he had caught hold of a technical phrase—that an "all-over pattern" would be "the thing." The painter at once saw that such a design would conflict with that of the wall space above. He suggested mouldings in corners and centres, as partaking of the structural character of the dado, and on the impulse of the moment determined to fashion them himself from plaster composition. This done, he directed his foreman to have the pieces put in place, and to be painted in purple, vermilion, orange and red. The owner was satisfied; he had got additional ornament, and thus without detracting from the effect of the really handsome wall pattern on the space above.

The writer's attention was excited by the remarkable, and yet tasty style, in which a dwelling by no means large had been decorated, illustrating, too, the little difference in cost between the color effect of painting and wall paper. The parlor walls are in oil, a clear French grey. The ceiling is a delicate cream tint, with a large panel in moulding corresponding with the shape of the room. The moulding consists of three members, a bend in the centre and two quirks on each of the outer edges. These are colored in gold, bronze and the panel tint; this is followed by a broad band of the tint of silver maple edged with deep red, with fine gold lines in ornament; the styling is two shades deeper than the panel tint, warmed with burnt sienna; the upper members of the cornice are the same as the moulding of the panel. In this cornice are three coves, the upper one in wood color, same as broad band around the panel, the middle is bronze and gilded, the lower or main cove maroon. The lower moulding of cornice is bronze color, same as found in panel, but a shade deeper, with gilt picture moulding, which divides cornice from wall. The frieze is yellow ochre with greenish-blue stencil ornament in Eastlake style. The walls in oil are a medium shade of Antwerp blue, with small diaper stencil rosettes in gilt. Thus there is a great deal of positive color employed in the decoration, but the whole is so toned down as not to produce any loud effects.

The Master Painters' Association of the city of Hamilton was organized January, 1887, and has at present a membership of 22.

Red or white oak, stained in imitation of the old oak of England, properly filled and finished in hard oil, gives a richness and tone to any apartment. It is especially suitable to halls and dining rooms.

For French polish for hardwood doors: 1. Shellac, 3 lbs.; wood naphtha, 3 pints. 2. Shellac, 2 lbs.; powdered gum mastic and gum sandarac, 1 ounce each; copal varnish, ½ pint; spirits of wine, 1 gallon. Mix and shake cold till dissolved.

To obtain a hard, smooth, glossy surface on wooden panels for art decorating purposes, dissolve gum shellac in alcohol, add enough drop ivory to make it thick enough to apply with a brush; put on three or four coats, rub down with rottenstone; when dry wipe off with a woolen rag, then varnish with a first-class thin varnish.

Mr. James Morrison, Toronto, has acquired the right for Canada to manufacture the Montgomery sewer gas trap.

CONTRACTS

CONTRACTS AWARDED.

Mr. Cameron, of Almonte, has been awarded the contract for the erection of a new public building at that place.

The contract for the erection of a new post-office at Brandon, Man., has been awarded to Mr. Hanbury, contractor, of that place.

The contract for the erection of a public building at Annapolis Royal has been awarded to Rhodes, Currie & Co., of Amherst, N. S.

Messrs. W. Garson & Co., of St. Catharines, have been awarded the contract for constructing water works for the town of Picton.

Mr. C. F. Babcock, of Windsor, has been given the contract for the erection of the new public building at Chatham, for town and county purposes. The figure is $31,286, exclusive of the heating apparatus.

Contracts have been awarded as follows for materials required for the extension of the City of Toronto water works system: For 3 in., 4 in, and 6 in. valves, $7.50, $9.30, $14.85 respectively, to Rice Lewis & Son; for 12 inch valves, $37.70, to John Perkins; for flexible joints, 60 in. and 48 in., $188 and $139.40 per set, to Camden Iron Works, Philadelphia; fo r24 inch, 30 in., 36 in., and 48 in. valves, $166, $270, $545, $712 each respectively, to R. W. Dumpster, Manchester; 4 in., 6 in., and 12 in. cast iron pipe, $40, $38, $37.50 per ton respectively, to the St. Lawrence Foundry; for 36 in cast iron pipe, $37.50 per ton, to Alex. Gartshore, Hamilton. The 3-million-gallon pumping engines will be supplied by the Blake Manufacturing Company, Boston, for $28 980.

CONTRACTS OPEN.

SUDBURY, ONT.—A $16,000 school house is to be built.

ST. ALBANS, P. Q.—The erection of a free hospital is spoken of.

VANCOUVER, B. C.—St. Andrews' congregation is about to erect a new church to cost $12,000.

BERLIN, ONT.—An agitation has been begun for the introduction of a system of sewerage.

KINGSTON, ONT.—St. George's Cathedral is to be enlarged and beautified at a cost of $35,000.

MONCTON, N. B.—The Y. M. C. A. has purchased a $5,000 lot and will erect a $10,000 building.

ESSEX CENTRE, ONT.—A by-law will be submitted to the people to raise $30,000 for water-works.

COLLINGWOOD, ONT.—The town clerk asks tenders until the 19th inst. for the erection of a town hall.

WINDSOR, ONT.—Mr. John Davis, inspector of distilleries, will it is said get out plans for a $10,000 residence.

KINCARDINE, ONT.—The citizens are considering the matter of the construction of a system of water works.

BRACEBRIDGE, ONT.—Mr. Croker, of Orillia, has completed plans for a block of stores and offices for Mayor Myers.

NIAGARA FALLS, ONT.—The people vote on the 17th inst. to raise $77,500 to put in a new system of water-works.

ASHBURNHAM, ONT.—The ratepayers will vote on a by-law on July 2, to raise $4.500 for a new town hall and market building.

NEWMARKET, ONT.—A by-law to raise $6,000 by way of a loan for the extension of the water-works will be voted on next month.

CAMPBELLFORD, ONT.—By-laws have been carried appropriating $15,000 for a system of water-works and $10,000 for electric lights.

LONDON, ONT.—The City and County Jail Committee have approved of plans for improvements to the jail building, to cost $12,000.

DARTMOUTH, N. S.—The matter of providing a system of water-works and sewerage, has by a vote of the ratepayers, been postponed for a year.

CHATHAM, ONT.—The ratepayers have voted by 256 majority in favor of borrowing $11,000 to assist the county in erecting joint public buildings.

SHERBROOKE, P. Q.—The site for the Protestant Hospital has been secured and paid for, and subscriptions are coming in towards the building.

OTTAWA, ONT.—Plans have been prepared for the enlargement of the Morrisburg Canal, and tenders for the work will be called for shortly. The estimated cost is $1,000,000.

KINGSTON, ONT.—The site for the "John Carruthers Science Hall" on Queen's University campus has been selected. The structure will be of stone and in keeping with the present building.

VICTORIA, B. C.—It is proposed to erect a new Protestant Orphans' Home, the present structure being too small.—A substantial brick block will be put up on the corner of Yates and Douglas streets, to cost $20,000.

WINNIPEG, MAN.—The sites of the new Government buildings have been decided upon. The reformatory will be located in Brandon, the Deaf and Dumb Institute in Portage la Prairie, and the Home for Incurables in Winnipeg.

TORONTO, ONT.—An appeal is being made for $70,000 for the enlargement and improvement of Trinity University buildings. A considerable amount has already been subscribed.—The following building permits have been issued from the office of the City Commissioner since the date of our last issue: E. Hewitt, pr. 2 story and attic bk. dwellings, Linden st., cost $9,000; Fred Wyld, 2 story bk. coachman's residence and stable, cor. St. George and Bloor sts., cost $4,500; Jas. Cuttrell, 2 story and attic r. c. dwelling, Cottingham St., cost $1,200; John Turner, pr. 3 story bk. stores, Yonge, near Wood st., cost $4,400; Public School Board, 2 story bk. school, Davenport Road, cost $18,653. 2 story add. to Landsdowne school, cost $9,381; 2 story add. to Rose Ave. school, cost $8.629; Jas Hedley, 2 story and attic bk. dwelling, St. Joseph st., cost $5,000; J. K. Fisken, 2 story and attic bk. dwelling, Queen's Park; John Fortune, 2 story and attic bk. dwelling east side Brunswick Ave., near College st., cost $3,000; F. F. Pickering, 2 story and attic bk. dwelling, Avenue Road, cost $12,900; F. F. Pickering, pr. s. d. 2 story and attic bk. dwellings, Gwynne st., cost $5,000; H. Howcroft, 2 story and attic bk. dwelling, Huron st., near Sussex Ave., cost $2,500; Fred Sole, pr. 2 story bk. stores, n. e. cor. Yonge and Wood sts., cost $6,000; Mrs. Allingham, pr. s. d. 2 story and attic dwellings, Suffolk Pl., cost $2,500; R. Baird, alterations to dwellings, 10 and 12 Baldwin st., cost $1,200; H. A. Massey, 2 story and attic det. residence, Jarvis, north of Wellesley st., cost $7,000; G. Vair, 3 story and mansard dwelling, Marlborough Ave., cost $2,500; E. E. Thomas, 2 story and attic bk. residence, Carlton st., cost $6,000; W. Stewart, pr. 3 story bk. stores and offices, Spadina Ave. and College st., cost $6,500; Geo. M. Miller, 2 story and attic bk. residence, St. James Sq., cost $5,000; W. M. Adams, pr. 3 story bk. stores, 544 and 546 Queen st. West, cost $5,000; W. McBean, three 3 story bk. stores, Spadina Ave., near Cecil st., cost $12,000; Mrs. Allen, pr. s. d. 2 story r. c. dwellings, Cumberland, near Yonge st., cost $2,000; J. C. Goddard, one story bk. workshop, Sherbourne st., cost $2,000; Trustees St. Margaret's Church, bk. church, Spadina Ave., near Queen, cost $15,000; W. G. Slocombe, pr. s. d. and one det. 2 story bk. dwellings, Spadina Ave. and Harbord st., cost $11,000; Mrs H. Brown, alterations and additions to dwelling, cor. Sherbourne and Gerrard sts., cost $7,000; J. Rankin, mansard roof and alterations to 110, 112 and 114 Peter st., cost $2,000; W. Hall, 2 story and attic bk. residence and stable, Ossington Ave., cost $5,000; Geo. Noble, pr. 2 story bk. stores and stables, Ossington Ave. and Dewson st., cost $4,500; H. Howcroft, det. 2 story and attic bk. dwelling, Sussex Ave., cost $2,500; R. Allis, 3 story bk. add. to hotel, Queen and Soho sts., cost $2,800; D. Sole, pr. 2 story bk. stores, Wellesley east of Sherbourne st., cost $2,400; Moulton's Ladies' College, Bloor st., additions and alterations, cost $15,000; A. G. Strathy, 4 story bk. temperance hotel, Simcoe and Adelaide sts., cost $8 000; Wm. Forbes, add. and alterations to dwelling 487 Sherbourne st., cost $3,000; P. H. Drayton, alterations to residence 127 Bloor st. east, cost $1,000; Mrs. Cornish, 2 story bk. add. to dwellings, n. s. College, west of Robert st., cost $1,000.—Ten thousand dollars is to be expended in enlarging the Women's Medical College building. The work will be undertaken in about a fortnight.—The Richard Institute, Bloor St., is to be enlarged at a cost of $10,000.—The waterworks committee re-advertise for tenders for steel pipe.

MANUFACTURES AND MATERIALS

FINE BUILDERS' HARDWARE.

HAMILTON, CANADA, June 4th, 1889.

EDITOR CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—We notice in the May issue of your valued publication, your remarks respecting the finer grades of builders' hardware, which are at present being imported from the United States, but which we hope to supply in due time. When we decided upon manufacturing locks and other builders' hardware, it was and is now our intention to put before the building public such a line of bronzed goods as would bear favorable comparison with the best produced anywhere, not only in design, but in the quality of material and workmanship, and with this result in view, we have now a large staff of pattern makers busily engaged in the construction of patterns for such a line of goods. It however, takes some time, but we hope that by the close of the present year we shall have our architects advocating and specifying Canadian made goods for all their buildings.

We invite your critical inspection of our illustrated supplementary lock catalogue which we forward by this mail, and considering that it is only seven months since we commenced work upon our first spring lock, you will be able to form some idea of the possibilities of the future.

Yours respectfully,

THE E. & C. GURNEY CO.

John H. Tilden, Managing Director.

A patent has been granted to Mr. John O. Parker, Toronto, for a flushing tank.

The Napanee Cement works had a narrow escape from destruction by fire a few days ago. Loss $500.

Thos. A. Ovens, Toronto, Ont., has been granted a patent for a paving composition composed of Portland cement, pulverized glass, and any suitable coloring pigment compounded, substantially in the proportions specified.

Mr. D. M. Bowerman owns five acres of land about two miles from Picton on which he has recently discovered a rich deposit of umber and mineral paint. Experts pronounce the umber to be a particularly pure article.

An exchange says: In lettering or working granite, you will find that your tools will hold an edge much better if you dip the cutting edge into turpentine occasionally. Keep a dish with some in where you can put the end of the tools in after every three or four blows.

An exhaustive test of the resisting power of Kingston and Wolfe Island limestone, was made a few days since. The Kingston stone was fractured with a pressure of 36,000 lbs., while the Wolfe Island stood all the pressure the machine could supply (52,200 lbs.) without visible effect. Two-inch cubes were placed under the pressure. The Kingston stone was fractured under a weight of 5,000 lbs., and ground into powder under a force of 14,000 lbs. The Wolfe Island cube was fractured under a power of 41,090 lbs., and burst with the weight of 50,000 lbs., making a noise like a cannon and flying from under the machine. The resistance was found to be equal to 11 250 lbs. to the square inch.

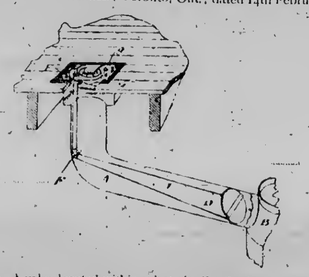
A manufacturing firm in Milwaukee had an experience recently with a rat, which is instructive says the *American Architect*. Noticing that the bills for water delivered through the meter were unusually large, the managers ordered an investigation, and at last discovered that the lead supply pipe in one place ran in contact with a waste pipe, also of lead. A rat, who frequented the waste-pipe, happening to be thirsty, and divining, by the curious instinct peculiar to such animals, the proximity of a supply of water, had gnawed a hole through the walls of both pipes, in order to get a drink. He succeeded in getting his drink, but omitted to close the hole again, and the water continued to flow through the meter, and out again through the waste-pipe, until the investigation revealed what had been done. Possibly some architect, who has had experience with rats, may do the profession the service of writing an essay on the subject of catching them, as well as of preventing them from doing mischief. We have heard it said recently, that a rat will not gnaw a hemlock board, and that a grain-bin in a stable, if made of hemlock, or lined with it, is as safe against rats as if it were lined with galvanized iron. Whether this is so we cannot say, but some one ought to know about the matter, and if that person will come forward with his information, he will deserve the thanks of the building community.

The following table shows the capacity, in gallons, for each foot in depth of cylindrical cisterns of any diameter:

Diameter.	Gallons.	Diameter.	Gallons.
25 feet	3,059	7 feet	239
20 "	1,958	6½ "	206
15 "	1,101	6 "	176
14 "	959	5 "	122
13 "	827	4½ "	99
12 "	705	4 "	78
11 "	592	3 "	44
10 "	489	2½ "	30
9 "	396	2 "	19
8 "	313		

Regulating Device for the Distributing Pipes of Hot Air Furnaces.

No. 30,787. Thos. G. Wanless, Toronto, Ont., dated 14th February, 1889.



Claim.—1st. A valve located within a hot air distributing pipe in proximity to the hot air chamber of the furnace, in combination with a cord or chain attached to the said valve, and leading to the room with which the distributing pipe connects, substantially as and for the purpose specified, 2nd. A valve pivoted within a hot air distributing pipe in proximity to the hot air chamber of the furnace, in combination with a cord or chain connected to the said valve, and conveyed over guiding pulleys to a point within or near the discharge mouth of the distributing pipe, where it is connected to an operating lever or spindle, substantially as and for the purpose specified.

The contract for the supply of Portland cement for use by the corporation of the City of Toronto has been awarded to Messrs. John Battle & Son, of Thorold, Ont.

The contract has been given the Wallace, N. S., quarries to supply 10,000 tons of stone to be used in the construction of the Grand Narrows bridge on the Cape Breton Railway. It is understood this will exhaust the entire output of these quarries for the present year and the greater part of 1890.

CHURCH OF ST. MATTHEW, FIRST AVENUE, TORONTO.

MESSRS. STRICKLAND & SYMONS, ARCHITECTS, TORONTO.

CANADIAN ARCHITECT AND BUILDER

FINE AND INDUSTRIAL ARTS · DECORATION · FURNISHING
CONSTRUCTION · SANITATION · ENGINEERING

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—THE—

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PUBLISHED MONTHLY IN THE INTEREST OF

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SUBSCRIPTIONS.

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In ordering change of address give the old as well as the new address. Failure to receive the paper promptly should be reported to this office.

ADVERTISEMENTS.

Prices for advertising sent promptly on application. Orders for advertising should reach the office of publication not later than the 12th day of the month, and changes of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The Ontario Association of Architects has appointed the "Canadian Architect and Builder" its official paper.

NOTICE OF REMOVAL.

The CANADIAN ARCHITECT AND BUILDER has removed to new offices at No. 14 King Street West, where subscribers and friends of the paper will always receive a hearty welcome.

PRESIDENT S. E. Dawson, of the Council of Arts and Manufactures of the Province of Quebec, expresses wonder at the slight notice which the work of the Council has excited from the press and people of Montreal. There are in Montreal alone 570 students pursuing a course of technical training, and in the schools throughout the Province last year the number of such students was 1346.

IT is said that in the department of the Paris Exhibition designed to illustrate the dwellings of mankind from the earliest times to the present, Canada is represented by an Indian wigwam. We concur in the hope expressed by the Toronto *Mail*, that the Parisians will not misunderstand the wigwam, and attribute to us a simplicity of architectural style to which we really do not aspire.

AS we have more than once endeavored to show, where a town decides upon having a system of water works, the municipality should assume the ownership and control, in preference to handing the same over to a private company, as has been done in too many instances. A despatch from one of our leading Canadian towns, will serve to show where the advantage lies as between the two systems. It states that "The surplus in the water works department for 1888 is nearly $9,000. This means a reduction of the rates to fully one-half of what they were under private ownership."

IT is difficult to understand the reasons actuating the City Council of Toronto in refusing to allow the Consumers' Gas Co. to compete with other companies for the privilege of lighting the streets by electricity. The Gas Company should be in an advantageous position to supply cheap electric light. Furthermore, in return for the privilege of wiring the streets of the city, it has offered to reduce the price of gas to the citizens to an extent aggregating $50,000 a year. The Council should be interested in securing light for the citizens at the cheapest possible rate, and no hindrance should be placed in the way of a responsible company which offers to supply this requirement.

THE Scripps League of Western newspapers have chartered the steamer City of Rome for the purpose of sending a delegation of American artisans to the Paris Exhibition. *En route* the party will visit Liverpool, Birmingham, Manchester, Sheffield, London, and other great manufacturing points in England; Glasgow and the shipbuilding industries of the Clyde in Scotland; Rouen, Paris, and the great lace and silk centres of France; Essen, Dusseldorf, Antwerp and other leading iron and industrial centres of Germany and Belgium. The central point, however, will be Paris and the facilities which the World's Exposition will afford for observation of mechanical arts in all branches. The delegation will start from New York on the 24th inst. This enterprise has been received with much favor by all interested in the improvement of the artisan on this continent.

UNDER the law prohibiting United States contractors from employing alien labor, a number of Brockville stonemasons have been discharged at Ogdensburg. The Dominion Government will be asked to rescind the privileges enjoyed by American workmen employed in Canada which are not accorded to Canadian workmen employed in the United States. We are not in favor of measures so restrictive as the United States law in question, but considering our geographical situation and the treatment which has been accorded us, the Canadian Government would be justified in adopting similar measures towards the United States. Should it decide upon doing so, we trust the legislation adopted for the purpose will apply to professional as well as unprofessional workmen, and that the motto will be "Canada for the Canadians."

IT should be a cause of gratification to every Canadian to learn that the contracts for the large conduit pipe across Toronto Bay, as well as for the construction of the new pumping engines required in connection with the extension of the city water-works system, have been awarded to Canadian manufacturers. This circumstance should serve to enlighten those whose opinion has been that none but pipe of small capacity could be produced in quantity in Canadian workshops. One of the objections raised to giving the present contract to the Peter-

borough firm, was that their capacity was too limited to allow them to turn out the pipe at a speed approaching that of the Scotch founders. There was perhaps some ground for this objection, but we are informed that it is the intention of the Peterborough company to immediately add to their buildings and machinery to an extent which will enable them to fulfil the requirements.

WE have it on most excellent authority that an American architect to whom has been entrusted the erection of a number of important buildings in Canada, recently made the statement that he would long ago have opened an office in Toronto but for the belief that his practice in Canada would fall off in consequence. In other words he understands the preference which many people in Canada are ever ready to accord foreign productions, and their belief that nothing excellent can result from the efforts of our own people. The architect in question deserves to be complimented upon his sagacity. With shame it must be confessed that he has correctly gauged the sentiment actuating many of our people. If these people would throw aside prejudice and travel sufficiently to be able to make fair comparisons between home and foreign work, they would not be long in finding out that Canadians can compete with foreigners in almost all lines of production. We have reached the stage in our history where we should rid ourselves of our provincialism, and manifest to the world our belief that we are just as good as our neighbors.

THE citizens of Toronto are being asked to contribute to a "children's fresh air fund," the ultimate object of which is to secure for poor children, especially those in delicate health, a residence of two weeks in the country. In the meantime, and until this object can be fully attained, the children will be given an occasional day's outing. Too much cannot be said in commendation of the service which the philanthropic citizens who have undertaken this project, are seeking to perform in behalf of unfortunate humanity. Without intending to throw cold water upon their efforts, we nevertheless feel it to be our duty to point out that two weeks residence in the country will do little to offset the effects of fifty-two weeks of every year spent in violation of all sanitary laws. Permanent improvement of the physical condition of the poorest classes, can only be brought about by improving the sanitary condition of the buildings they live in, and teaching, and if need be compelling, them to comply in some measure with sanitary laws. This is a matter for the municipal authorities to deal with, and we are free to confess, its solution will be attended with many difficulties.

WE had something to say quite recently on the importance to the contractor of knowing how to estimate. We referred to cases in which the bids sent in for work varied as much as fifty per cent. We learn that this condition of affairs is not confined to Canada. A writer in one of our American exchanges gives the following startling example of the lack of knowledge and recklessness which characterize the bids of many contractors: "A friend who is interested in such matters, who was recently in Nashville (the capital of Tennessee), had occasion to examine some of the bids made for certain public works there. From the extent and character of these works, there were included among the bidders some of the best contracting firms and builders of the whole country. I selected a few from each to show the run of them. These bids were all made on plans and specifications most explicitly and carefully prepared. The island filter: among the bids were $22,190, $29,300, $42,709. The foundation of the pumping works: among others were $67,280, $73,525, $107,670. Bridge piers, $76,720, $85,859, $133,907, $170,573. Bridge superstructure, $64,433, $75,000, $91,000. For the thirty six-inch water main from the pumping works to the reservoir, $20,400, $33,315, $19,000, $55,960. For the reservoir, $530,921, $351,000, $400,600, $435,954, $603,887. In one of these bids the secretary of the board discovered an error, in carrying out and footing, of $153,000. It will be seen that in some of these the difference between the highest and lowest bid was more than the lowest bid." We need look no farther to find the cause of so many failures among contractors. We trust the series of articles entitled, "How to Estimate," which we are now publishing, will be carefully read by Canadian contractors, and will assist them to the adoption of better methods of calculation.

ON the important question of the appointment of a paid Commission to superintend the construction of the new Toronto Municipal Buildings, barely one thousand ratepayers of the city took the trouble to record their votes. Of this number 638 voted against the appointment of a Commission. We cannot do other than regret this decision, which leaves the superintendence of the construction of the buildings in the hands of a committee of aldermen, the *personnel* of which will be subject to yearly change, and the members of which, with one or two exceptions perhaps, will be without the necessary experience to qualify them for their duties. Supposing that every member of the committee should honestly endeavor to serve the city's interests, it would nevertheless be too much to expect that a work of such magnitude will be carried to completion under the direction of the committee without the occurrence of some costly mistakes or impositions. We can only hope that this opinion may prove not to be well founded, and that both the citizens who voted to defeat the appointment of a Commission, as well as those who by their neglect to vote contributed to that result, may have no cause for future repentance. The application of some citizens for an injunction to restrain the Council from proceeding with the erection of the buildings without appointing a Commission, has been refused by the Court, on the ground that the Act of the Legislature merely gave the Council power to appoint a Commission, without making the appointment compulsory. With regard to the intention of the Council to appoint a Commission, as plainly expressed in the pamphlet issued for the information of the ratepayers when asked to vote $600,000 to complete the undertaking, the Court held that the Council were at liberty to revoke or disclaim that intention. The learned Judge in expressing this view, took occasion to put on record his opinion of the conduct of the Council in thus repudiating the promise made to their constituents. This he did in the following words: "In deciding whether or not an injunction should issue, I have nothing to do with the propriety of the course adopted by the Council in repudiating a representation apparently put forward by their authority, and which was well calculated to mislead persons who thought a Commission desirable into believing that the Council would appoint one. In disposing of the costs, however, I am at liberty to say that the conduct of the Council appears to me to have been so discreditable that their costs ought to be refused."

WE have pointed out elsewhere in this paper that any permanent improvement in the physical condition of the poorest classes in our cities, can only be effected by improving the sanitary surroundings in which they exist. We are pleased to notice that a first step in this direction has just been taken by the municipal authorities of the city of Toronto, by the recommendation of an ordinance, which provides that "No dwelling house or other building occupied or intended to be occupied for human habitation shall hereafter be erected on any street, avenue, lane, alley, place, thoroughfare or public communication in the city of Toronto which is less than 40 feet in width. No dwelling house or other building occupied or intended to be occupied for human habitation shall be erected or used upon any land having a less area than 1,200 square feet. Every dwelling house or other erection occupied as a dwelling house shall have attached thereto as the yard or curtilage thereof a vacant space having an area of not less than 500 square feet, on which no building of any kind shall ever be erected or maintained." The foregoing sections are not to apply in any case in which the City Engineer and City Commissioner shall report in writing, and three fourths of the members of the said Council present at any meeting thereof shall vote that, in their opinion, the opening or acceptance of the particular thoroughfare or the erection of the particular building is in the public interest, notwithstanding that the same is a contravention of this by-law.

Provision is made for the punishment of persons guilty of infractions of the by-law. The extreme penalty is $50 fine. The convicting magistrate has power to order the offender to remove or pull down the building or erection which has been put up in violation of the by-law. If the defendant fails to remove the building by the time ordered by the magistrate it shall be lawful for the City Engineer, City Commissioner or any other person authorized by the City Council to pull it down at the expense of the owner

This ordinance is very good so far as it goes, but it is, as we have said, but a first step. A sanitary regulation of this kind should go farther than defining the narrowest limits within which dwellings may be crowded together. To be effective, it must seek to regulate the interior arrangement and construction of the cheaper class of dwellings to an extent that will insure as far as possible the health of their inmates.

THE 17th annual exhibition by the Ontario Society of Artists, which was held in the Canadian Institute in Toronto recently, was successful beyond the expectation of the members, a very large number having viewed the pictures exhibited. There was also many more pictures sold than at any of the previous exhibitions.

We do not profess to criticize the pictures, preferring to leave that to more able hands. We may say that there were some good works, showing that our artists are capable of great things if encouraged; many that were worthy of commendation, and a few that should not have been there at all.

We can see no reason why a hanging committee should not use some judgment in the selection of pictures. It must be understood that those persons who are capable of judging as between a good and bad picture will wonder why the poor pictures were hung, while those unable to distinguish the good from the bad, will be puzzled as to what is good and what is bad artistically. The weeding out of the bad would benefit the public, but not nearly to the same extent that it would the artists themselves. There is no inducement for a good man to exhibit where he is likely to be placed as on an equal standing with a very poor man, or one only beginning to win a position. Make it more difficult to gain the admittance of a picture to an exhibition, and the more highly will the privilege be valued. But the strongest argument for the adoption of such a rule is, that the public should not see at any exhibition of the Ontario Art Society, pictures of ordinary or doubtful merit. The object of holding the exhibition should be to educate the public in art, and that cannot be done by placing before them for their admiration pictures of doubtful merit, or possibly none at all. The fear of offending a brother artist should not weigh when the interests of the Society and the public are at stake. The hanging committee could be selected from among those men who exhibit but few pictures, but who are nevertheless capable of judging the qualities of a picture, and who would not hesitate to weed out the bad.

There is another matter on which we would like to make a few remarks, and that is the values placed on the pictures. Every man has the right to place his own value on his work, and we do not see that anything like corresponding values can be placed on the pictures. There is no doubt but that as matters stand the values placed on some works are very much higher than those placed on others of greater excellence. This is not, however, our principal cause of complaint, but rather that values are placed on pictures which nearly every man in the room knows is a "fancy" one. There are but few pictures which cannot be had at a very liberal discount by those who choose to adopt the not very enviable position of beating down the artist, or if it cannot be had, then one can be assured that in a few days or weeks it will be offered at much lower figures, or very possibly go down under the hammer of the auctioneer. We should like to see the artists mark their pictures at the very lowest figure they will take for them, and refuse to come down even one cent. The confidence of the public would thereby be gained, and they would not, as they now do, refuse to buy for fear they may find out later on that they paid more for a picture than they need have done.

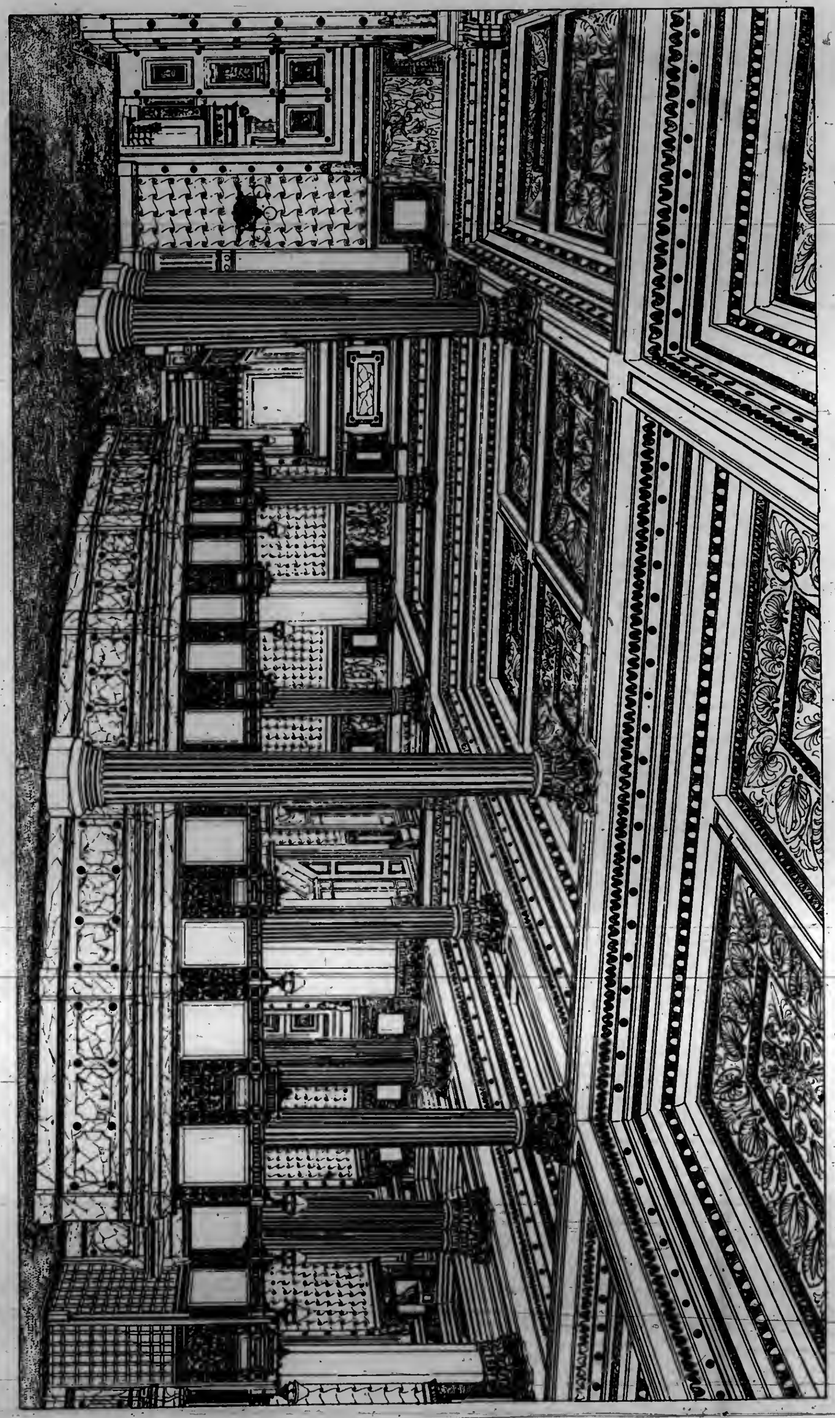
If the public were assured that all the pictures on the walls at an exhibition of the Society were good, and valued in the catalogue at something like their proper artistic value, they would not hesitate to buy as they now do. We have not the slightest doubt but that there are very many persons who would buy pictures of our artists if they were assured, first, that they were getting a good picture, and secondly, that they were not paying more than it was worth. A man who knows a good picture from a bad one will not hesitate to buy when he sees a favorable opportunity, but the man who has no confidence in his judgment as to the merits of a picture, will hesitate, and if he has any common sense, will refuse to buy as matters now stand.

The Society does not seem to care what the sketches are like which they allow the subscriber to select from. At the last exhibition there were a number of good sketches, but we may safely say that that there were very few in the portfolio on the last day. That such was the case, reflects much credit on the subscribers. They seem to have been able to select the sketches having the highest merit and leave the rubbish. Now we think that all sketches from which subscribers are allowed to select should be good, and who should be better judges as between the good and the bad than the Society? The Society should not hesitate to throw out all inferior sketches for fear they may be charged with favoritism or jealousy. By accepting poor sketches, and allowing them to be palmed off on their subscribers, the Society is doing a wrong to those who are supporting it, and also to itself.

All artists believe that the public requires to be educated in art. We should like to enquire how that is to be done by allowing them to take to their homes wretched water color drawings. The artist may say that they get value for what they pay for—for what can they expect to get for $5.00? But such is not correct. A bad water color is worth nothing, and the subscriber has given $5.00 for it. Where does he get his value? No! the Society should see that no subscriber can by any possible means get less than value for his money. Suppose he receive more than value, as many do, no harm results, but the opposite. A good picture is sent out to exert an influence for good upon the tastes of the people for art, and to induce them to buy better and more expensive ones in the future.

Harm to art can only result from allowing poor, or worse than poor pictures, to go into the homes of our people under the auspices of a Society of Artists. If artists do not wish to paint good pictures for the Art Unions, then for the good of art in this country, the Ontario Society of Artists should not allow them the privilege of painting bad ones. We are sanguine that if the artists will do credit to themselves and paint the best pictures of which they are capable, it will result in benefit to themselves both in reputation and remuneration.

We are of the opinion that no pictures should be hung at the exhibition which are in the hands of parties other than the representatives of the Society, for disposal. It is not seemly that anything approaching a regular sale of pictures should be allowed at an exhibition. The value of the pictures are in the catalogues, and they should be sold at those figures or not at all. It is a bad policy to allow the purchaser to believe that he can obtain a picture at a lower rate by making offers which very often bear no relation to the value of the picture. Agents should therefore not be allowed to urge upon a prospective purchaser of a picture those in which they are interested, nor to lower prices to induce a man to buy a picture he would not otherwise buy, to the loss of an artist who does not desire to adopt similar methods.



INTERIOR OF BANK OF MONTREAL, MONTREAL.—MESSRS. TAYLOR, GORDON & BOUSFIELD, ARCHITECTS, MONTREAL.

OUR ILLUSTRATIONS.

CHURCH OF ST. MATTHEW, FIRST AVENUE, TORONTO.—STRICKLAND & SYMONS, ARCHITECTS, TORONTO.

THE church on plan consists of a nave 70' x 35', with a wide aisle to the north separated from the nave by an arcade carried on massive pillars of Portage Entry stone. The chancel at the east end occupies the full width of nave, being separated from it by a handsome oak rood screen, which also separates the organ chamber from the church. The chancel, extending farther east, forms the sanctuary, which is in immediate connection with the clergy vestry and choir vestries, etc. The interior of the church will be finished in stucco work, the window and door trimmings and dados being of brick. The nave is amply lighted by five pairs of large windows to the south, and clerestory windows over the nave arcade to the north. It is the intention of the congregation to place a fine memorial glass in the east window of the chancel. The side walls of the nave are 30 ft. high to the cornice, and 50 ft. to the apex of roof. The roof over nave and aisle will be in elaboriate open timber work, finished in natural pine. The nave roof extends over chancel, but being much more elaborated over that portion than over nave. The sanctuary is finished in pressed brick, sedilia and piscina in Portage Entry stone, showing on the south side; the walls and ceilings of the sanctuary above the brickwork will be elaborately decorated in color and bronze. On exterior, the church will be finished with red Credit Valley stone to the height of the window-sills, and above that in red brick relieved with stone trimmings. The design permits of a tower and spire being erected on the north-west corner, and it is hoped soon to have the funds necessary for its completion. The tower over the vestry is to receive the set of chimes for the present. The church will be heated and ventilated on the best system, and the entire chancel fittings and seating of nave are to be in hardword. The building is at present above ground line, and it is hoped that the roof will be on before fall.

A rectory will be erected immediately in connection with the church at a cost of about $5,000.

INTERIOR OF BANK OF MONTREAL, MONTREAL.—MESSRS. TAYLOR, GORDON & BOUSFIELD, ARCHITECTS, MONTREAL.

REPOSE IN ARCHITECTURE.

TOO much of the architecture of to-day lacks the element which is most conducive to dignity—repose, writes Mr. E. H. Brown in the *Builder and Decorator*. Our buildings are like ourselves, full of a nervous, restless energy; quaint, picturesque, striking perhaps, but rarely restful. We are too fond of producing feats of architectural gymnastics, buildings, which cause us to stop, look and wonder, but as we see them day after day we soon grow tired of them and long for something different, we know not what, something different is all we ask for. We are astonished and startled by what we see around us, but the work of our architects is too much like the sensational novel of the day turned to stone.

On the banks of the Danube, six miles away from the old town of Ratisbon, stands a building erected by King Louis of Bavaria to commemorate the illustrious dead of Germany. Built upon a massive granite base, up which winds a broad staircase, is an exquisite Greek Doric temple of pure white marble. The hill side is covered with forest trees, in the midst of which the granite walls stand out prominently, while the Walhalla itself is seen clear cut against the distant sky. As we gaze upon it we are almost awe-struck with the sublime beauty and majesty of the building, dominating the landscape as it does with acalm serenity, contrasting strangely with the rushing torrent of the mighty river at the foot of the hill. None of the great Gothic cathedrals, with their sky towering vaults and uplifted spires, can produce the same feeling of sublimity, for none of them exhibit the same majestic repose. Durham Cathedral alone approaches the Walhalla in grandeur, but Durham is not a Gothic building. It too, in the massiveness of its Norman architecture, its great square towers, and time-worn walls, looks down upon us from the cliffs of Durham as if it were some mighty giant who had laid himself down to rest, conscious of his mighty grandeur.

As we walk up Corinthian-avenue in this good city of ours, and see before us the exquisite façade of Girard College, we cannot help feeling the fascination which its quiet majesty exerts upon us. There is no wonder excited within our minds as to what holds the building up amidst the thrust and counter-thrust of innumerable arches, pinnacles, and buttresses. There is no startling combination of colors or materials which flashes upon and dazzles our sight as the blare of trumpets deafens our ears. Instead there are vast columns, carrying the simple downward thrust of the weight above them. We can see, without puzzling ourselves, that the building will stand because it cannot help it. The horizontal lines dominating the composition produce the effect of repose which gives the vast white marble building its peculiar majesty. People may smile as they choose at a three-storey building in the cella of a temple, but can they, when brought face to face with it, truthfully say they can view it without feeling impressed by its majestic beauty?

This element of repose is an essential one in all architectural compositions which make any pretence to being monumental in their character, but is rarely possible in combination with the picturesque. While this latter quality may not be out of place in the cottage or in the village street, it seems to be better suited to out of the way places than to the busy haunts of men. It has no place in the great warehouse, the office building or the business house. These should not be buildings which attract us, perchance, by their quaintness, their odd conceits, or the elaboration of their detail. We have no time in this busy work-a-day world of ours to stop in the midst of our toil for such things as these. They worry us with their oddities and their strange conceits. They are as much out of place as one of Ouida's novels would be in the counting house. Our business building should have quiet dignity, a simple massive grandeur that we will not grow tired of, that will by the very sight of them tend to rest us from the worry and turmoil of our struggle for bread. We should study the use of plain wall surfaces, of horizontal mouldings, of exquisite perfection of detail, rather than that of ornament piled on wherever there is space large enough to be carved, or arches of every conceivable shape, or of crow stepped gables turning themselves towards city streets in such profusion that the skyline resembles more the teeth of some huge demon saw, than the roofs of buildings for the use of sober men. Is it not possible for our restless American nature to curb its exuberance and learn to appreciate the value of repose in our architecture, even though we may never allow ourselves any rest in our struggle for the "Almighty Dollar?"

MEASURING BRICKWORK.

PROBABLY the best way to measure brickwork, in the opinion of an American writer, is by the dimensions. The unit of measurement in this case is not important. The cubic foot or yard is employed to some extent, but the perch of 25 cubic feet and the superficial rod in brickwork one brick thick, are often used. Unfortunately the term "rod" has no very definite significance. Two hundred and seventy-two and a half feet super, and one and a half bricks thick, 16½ feet square or 272½ square feet and one brick thick, 16½ square feet and 63 square feet, are all termed "rods." Under these circumstances it would probably be of advantage if the cubic foot or yard could be made the standard unit of measurement for brickwork throughout the country.

It may be added that the number of bricks contained in any piece of built brickwork may be approximately ascertained by deducting one-tenth for the volume of mortar.

The sand blast is now utilized for cleaning dingy stone walls of buildings.

Mr. Jas. Balfour, architect of the new Hamilton court house, has notified the Committee that it will not be possible to erect the building according to his design for the amount subscribed by the council, $75,000.

A new process of hardening plaster so as to make it available for the construction of floors in place of wood, has been brought before the French Academy of Science by M. Julte. A mixture of six parts of plaster of good quality and one part of finely sifted, recently slacked white lime is employed like ordinary plaster. After it has become thoroughly dry, the object manufactured from it is saturated with a solution of any sulphate whatever whose base is precipitated in an insoluble form by lime. The sulphates especially recommended for the purpose are those of iron and zinc. In order to obtain the maximum of hardness and tenacity, it is necessary to temper the limed plaster well in as brief a space of time as possible, and with no more water than is strictly necessary.

MONTREAL.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

MONTREAL SEWERS—CONTRACT VS. DAY WORK.

NOTHING further has transpired since your last issue regarding the construction of sewers by contract or by day's work. The question has been once or twice brought before the Committee, and the Chairman of the Road Committee seems determined that he will yet succeed in having the sewers constructed by contract, rather than by his department under "day's work." Many owners of real estate are inclined to side with him on this point, while the majority of the Council still stick to having the work done by the road department themselves. In my opinion there is lots of work, such as street repairing, side walks, flag stones, crossings, gullies and general repairs; that would take all the attention of the Road Department, without meddling with the construction of such a simple matter as the sewers themselves. If the sewers cannot be constructed by contract, then no work can be constructed by this method. If there has been, as stated, any defective work constructed by contract for the city, the fault lies with the inspectors who are supposed to be daily on the work to see City Surveyor's instructions carried out. If the authorities, instead of wrangling over the construction of sewers by contract or day's work, would place the whole responsibility on the City Surveyor and give him *carte blanche* to employ competent inspectors at a fair remuneration, instead of compelling him to employ friends of the influential aldermen, who are generally broken down tavern keepers or friends of political wire pullers, better results might be expected. As long as this system exists, how can we expect to get good work done? Even the mechanics themselves will rebel against having their work inspected by men who are totally incompetent.

MOUNT ROYAL INCLINED RAILWAY.

The directors of the Mount Royal Inclined Railway Co., have decided to extend their lines down to Park Avenue at once, and have instructed Mr W. McLea Walbank to prepare the necessary plans and specifications and take tenders for carrying out the same.

Capt. Jas. Wright, Mechanical Engineer, is preparing the plans and specifications for the boilers and engines to create the motive power for the same.

The work will begin immediately, and it is expected that by the middle of August the cars will be running. There will be a double track 4 feet 8½ inches gauge, with the motive power at the upper end of the incline, which is about 1 in 12, and the cars will be drawn by steel wire cables, with a platform at or near the Golf Club House. The city has promised to grade and macadamize a carriage road to connect with the street railway, a distance of about 400 feet.

The passengers will have to change cars at the foot of the present incline. Owing to the great difference of altitude between the two railways, it would be impossible to run the same cars over the two lines. This, however, under the present circumstances is not an objection, as the present terminus will be a very convenient one for passengers coming by the way of University St., and the new platform will be used by those coming by Park Avenue.

The new railway carries twice as many passengers as the existing one, but takes twice as long to make the trip, therefore the upper road will be clear in time for the arrival of the second train. The present incline makes its trip in 45 seconds.

MONTREAL STREET RAILWAY.

Complaints are loud against the running of our street railways. The Council have at various times ordered a detective to watch them to see that they keep up to their time table, but through some unforeseen reason they have not been able to catch them. The tracks are also very much out of repair, and hardly a day passes without some vehicle coming to grief. One would hardly think that a town of the size of Montreal would put up with the tracks constructed such as ours are.

BOULEVARDS.

A petition has been sent in to the City Council by residents owning property on the east end of Mount Royal Park, offering to cede 20 feet of ground to the city, provided the city gives an additional 20 feet and makes a boulevard from St. Jean Baptiste St. to Mount Royal Avenue. The Council are likely to accept, provided the proprietors will agree to build all their houses facing the park, and promise not to build any stables or sheds on the boulevard.

THE BUILDING INSPECTOR.

The city of Montreal has a Building Inspector. It has also a by-law regarding the construction of buildings within the city limits. Either the Building Inspector does not attend to his duties or the by-law is very defective, for I notice that on St. James St., our principal thoroughfare, there is at present in course of erection an additional story to a building occupied by the Bishop Engraving Co. which would be a disgrace to the smallest village in the Dominion, to say nothing of the "commercial metropolis." I do not know if the Building Inspector's attention, as been drawn to it, or how he interprets the by-law, but according to my interpretation, "it is contrary to law to erect a wooden building without encasing it with brick." Even casing it with brick is bad enough, but when we see a fire trap, (such as this undoubtedly is) erected on a principal street, it is no wonder the citizens ask, "what is the use of Building Inspectors and by-laws if both are put at defiance?"

BUILDING NOTES.

There has been quite a noticeable improvement in the building trade during the past month. Contracts are open for the following buildings: The extension to the Merchants' Cotton Factory, two houses for Dr. Hingston on Sherbrooke St., a house for R. J. Tooke, Peel St., a cottage for N. White, Quibler St., a Methodist Church on St. Catherine St. west, and several buildings on St. Lawence Main St., a house for H. Brodie on Dorchester St. west, a warehouse on St. Patrick St., for Messrs. A. W. Morris & Bro., the celebrated cordage, jute and binder twine manufacturers, consultation rooms and dwellings on St. Catherine St. for Dr. Buller, and block of houses on Bishop St. for Mr. Whitley, house for Peter Lyall on same street, house on Peel St. for Mr. E. F. Mosley, one adjoining same for W. McLea Walbank, architect.

Preparations have commenced for the widening of Bagg St., which will cause the demolition of several houses, and will doubtless tend to induce owners to build new and improved dwellings on the new line of street.

PENCILLINGS.

The City Council have been unable to decide upon an assistant to Mr. B. D. McConnell, superintendent of the water works. The matter has been shelved for a time at least, by a resolution of the Council ordering the candidates to undergo an examination, but it is questionable, even if this is done, whether the Council would then accept the candidate recommended by the examiners. I understand that the Council have been pretty thoroughly canvassed and their votes promised to one or other of the ten candidates. It is really too bad that valuable time should be lost and the city suffer because the Council cannot agree among themselves upon a suitable official to assist the superintendent.

It is said the City Council will vote $1,000,000 towards the prevention of floods.

The Warren Scarf Co. have commenced laying their patent asphalt on Notre Dame Street. It is to be hoped they will not crown it so much as James Street, thereby making it slippery for horses.

STRENGTH OF PLASTER.

THE extraordinary forces of adherence, etc., of the Paris plaster enables the work on ceilings or partitions to be executed with far less expense of lathing than similar works executed with our lime and hair. Rondelet made experiments to ascertain the limits of these forces, and he obtained the following results. A parallelopipedon of plaster, with a base measuring one inch each way, supported a weight of 765 lb., acting so as to tear it asunder. This he called the force of adhesion. Similar figures résisted a crushing weight of 722 lbs.; so that the ratio of the resistance of plaster to an effort of traction compared to one of extension is as 1 to 9½. Rondelet found that there was a sensible difference in the manner in which plaster adhered to brick or stone, from the action of mortar under similar circumstances. For when cubes joined by the respective materials were subjected to forces tending to tear them asunder, the mortar broke through the centre of the joint, leaving particles attached to the upper and under surfaces. Plaster, on the contrary, left the surfaces perfectly clean. In new works the plaster adheres to other materials with about half the force necessary to tear it asunder. Mortar, for several years at least, only attains one-third of the same force. This ratio does not continue, for after ten to twelve years the plaster loses its strength, while, at the same epoch, we find the adhesion of the mortar to other substances to be equal to the force of adhesion of the cubes themselves. The subsequent ratios are in inverse progression. Mortar always hardens by time; plaster loses its strength. As these remarks only apply to its use as a mortar externally, it should never be employed permanently for such positions. Internally the loss of strength is not so rapid, for it depends upon the absorption of moisture from the atmosphere. For temporary works, for internal works, requiring great rapidity of execution, however, the use of Paris plaster is invaluable.

The new cantilever bridge which is to be erected across the St. Lawrence at Quebec to connect the Intercolonial and Canadian Pacific Railway systems will be of gigantic dimensions. The width of the St. Lawrence from shore to shore at Quebec is about 4⅔ miles, and the total length of the bridge, with approaches, will be nearly 6½ miles. Two main piers are to be constructed of solid granite in forty feet of water, about 500 feet from each shore. These two piers are to support a cantilever of a span of 1,442 feet. The tops of the bridge from high-water mark will be 408 feet.

PERSONALS.

The estate of the late Wm. Davis, contractor, of Ottawa, is valued at $767,000.

Mr. R. McLean Charlton, architect, of Toronto, has opened a branch office at West Toronto Junction.

Mr. S. G. Curry, of the firm of Darling & Curry, architects, Toronto, is holidaying in the health-giving clime of Muskoka.

Mr. W. M. Gartshore, Secretary of the McClary Manufacturing Company, London, has returned from a very successful business trip to the Pacific coast.

Mr. Edward Leonard, a well-known contractor, of St. Catharines, Ont., died very suddenly of heart disease in that city on the 7th inst. He was a member of the firm of Smyth, Leonard & Mumford.

REFLECTIONS AND FURNITURE

ART INSTRUCTION IN ONTARIO.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—The work of the Ontario Art Schools was on exhibition during the first week in June. There were a very large number of drawings on the walls from the different schools throughout the Province Many of the drawings showed considerable skill on the part of the students, but the bulk of the work would lead one to the opinion that there is no definite purpose in the art training given in these schools. I am informed that the sole purpose of the Minister of Education is to give a training in the technical arts that our industries might be benefited. The drawings at the Normal School, to a very large extent, were the work of young ladies who are anxious to paint pictures before they learn to draw. They wish to have as one of their accomplishments, the artistic one of painting. It matters little whether they can draw or not, so long as they can produce something which will be the admiration of some of their inartistic friends.

Many young ladies are taking a course in some one of these schools with the purpose of fitting themselves to give lessons in drawing and painting. It is therefore necessary that they should be properly and thoroughly trained, as they will exert a very large influence for the advancement or retardation of art in this country. They are not receiving that instruction in the art schools at present, nor will they until the management of the schools is placed in the hands of men who know what art is, and are capable of directing the schools so that they will be able to give the training which has been outlined for them. If the schools are only to give instruction in the technical arts, well and good, but have the training a correct and a thorough one. I should like to have schools teach art with no other purpose than to cultivate and refine the people, but if it cannot be done, I will not complain. But when neither one thing nor the other is being done, and valuable funds are being expended, we have every reason to find fault.

A reasonable amount of money expended in art training, be it technical, industrial, or what is sometimes called high art, under a competent and intelligent management, would be money well spent. But money spent in teaching nothing in particular under the name of art, is money worse than wasted. I should have liked to have seen the drawings which were sent in in competition for the medals placed together, and where one could see them. It is almost impossible to make any comparison between competitive drawings, when they are placed some distance apart. It may be that there are those who have no desire that the public should be afforded any opportunity to make comparisons. The drawings which competed for the gold medal should have been placed together, and in a good light. This was not done; they were distributed about the corridors under the gallery of the theatre where there was little or no light. I see that the decision of the judges was not acceptable to one at least of the competitors, who very spiritedly returned her certificate to the Minister of Education. I am inclined to believe that Miss Beatrice Lukes was advised correctly by her friends that she should have received the gold medal. The medal was to be given under definite conditions, which were not followed by those who decided the competition. But in any case, it is the opinion of those competent to judge, that Miss Lukes should have been awarded the medal under any and all circumstances. There are rumours that the judges did so decide, but that their decison did not meet with the approval of of some one in authority, who deemed that it would be better that the interests of an individual should be sacrificed to the advantage that would result to art and a particular person by having the medal go to different parts of the country as might be found desirable. It is not pleasant to refer to such stories, but where there is apparently some foundation for them, they are better referred to. There is one point on which I have an opinion, and that a very definite one, and it is, that none but the most capable men should be appointed as judges in the awarding of places to the students of the art schools. There were more than one of the judges in this last competition who were totally unfit for their work. Competent judges are not hard to obtain, but it may be that when competent they are not so tractable nor so likely to overlook the faults of the art school system as those who are not very well posted in the matters on which they are supposed to give a decision.

Dr. White, the president, does not seem to be altogether satisfied with the position of the school. He complains that the attendance should be at least 8 or 10 times greater. I do not hesitate to say that I am very thankful the attendance is no greater, for there are now far too many receiving instruction in art (?) which they would be very much better without. He is also inclined to affirm that the Art Societies of this city are indifferent to art. I am inclined to agree with him to some extent, but do not think they are to be censured for holding themselves aloof from his school. The fact of the matter is, their assistance was not wanted except to supply funds, and to give a standing to the school which Dr. White is evidently aware it does not possess. There was no intention to give them any control of the school, nor even to allow them to render assistance or intelligent advice. When the directors are really desirous of having the assistance of the Art Societies of this city, they will find them only too ready to give any assistance in their power. But they do not propose to enter into a contest with ignorance for supremacy in the teaching of art with Government funds. The moment that their advice was opposed to the authorities, that moment would they have to go, as they have had to go before.

The Art Societies of the city should combine and undertake the support of a first-class art school. The Royal Canadian Academy should do something towards educating the people of this city in art, if it desires to secure the support of the public in the erection of its proposed new building. Talk on the beauties and advantages of art is not of much account. Work will effect very much more. What has the Academy done to aid the young men of this city towards gaining any instruction in art? None whatever. And there are those who are deserving of such aid. The members of the Art League of Toronto should receive encouragement and aid in their efforts to study art, for they have not united for assistance, but have gone to work like men to aid themselves, and are reaping their reward.

I should like to know what value the certificates of the Minister of Education possess. They seem to be distributed with a most liberal hand, so liberal in fact, that one is inclined to place their value below the cost of printing. I should like to know why it should be considered necessary to give a scholar at an art school a certificate that he has attended such school. Scholars at our public schools are not thus provided with certificates of attendance. Before we know where we are, we will have the country peopled by certificated artists from the Ontario Art Schools, which would be very nearly as great an infliction as the French language in the public schools. Certificates should only be given for proficiency in the different branches of the course, and should mean something. As it is, they mean nothing, and are of no value whatever except to cause a person to distrust the possessors knowledge of the subject set forth in the certificate.

ANTI-HUMBUG.

If paint refuses to stick to new tin or other metal, sandpaper the metal.

Metallic or iron oxide paint is the best article for tin roof. Apply directly upon the new tin.

Gum animi, 2 ozs., in a half pound of linseed oil, is suggested as a good liquid to be used with bronze powder; the gum to be gradually added to heated oil; then boil, strain, and dilute with turpentine.

To make a good paint for shingle roofs that can be applied cold and dries quickly: Take one barrel of coal tar, ten pounds of asphaltum, ten pounds of ground slate; mix by the aid of heat and add two gallons of dead oil.

IS IT ADVISABLE TO RESORT TO THE USE OF WROUGHT IRON PIPE AND FITTINGS?*

IN view of the fact that the sanitary regulations of municipal bodies are requiring the cast iron soil, waste and ventilation pipes to be air tight, is it advisable to resort to the use of wrought iron pipe and fittings?

What is the necessity for substituting wrought iron for cast iron pipe for soil, waste and ventilating purposes in order to make same air and water tight? There is no doubt but wrought iron pipe can be put together perfectly tight, so also can cast iron pipe. It is being done successfully every day. Joints made with lead and oakum will not be tight, however, unless pains are taken in packing the oakum sufficiently to calk the lead against, without driving more or less of it into the pipe, thereby having nothing against which to pack the lead, and the use of lead free from solder, nor will a screwed joint be tight unless the threads are perfect and tightly screwed together. This joint, however, has the advantage over lead in the fact that it will soon rust tight. and the longer it stands the tighter it becomes. A lead joint in cast iron pipe is liable to become loosened from the following causes: unequal expansion and contraction, settlement of walls, floors and beams, from which pipes are often hung and dependent for support. To what extent such settlement affects cast iron soil and waste pipe well constructed to begin with, I cannot say, but offer it as my opinion that to all intents and purposes it is unaffected by such settlements as usually occur in a building before the same is condemned and abandoned, when the cast or any other soil pipe would naturally share the same fate, so the real condition being of no importance so far as further use is concerned.

Wrought iron pipe is very elastic and will yield to strain without injury more readily than cast iron pipe: but this is of no special importance in this particular case, as we do not construct soil-pipe to support buildings nor keep floors from settling, nor would it do it if we did, therefore cast iron pipe is as good as wrought, so far as trouble from settlement is concerned, according to my judgment.

The weakest part of using wrought iron pipe with threaded joints for house drainage purposes, is the impossibility or impracticability, of protecting that part of the screw-head that will not go into the fitting, leaving ½-inch or more of unprotected pipe threads cut nearly in two by the action of the dies in cutting the threads, the threads being ⅝-inch deep, the pipe not more than 5-16 thick. You can readily see its weakness here. Cast iron pipe is also weak here, although in a different manner. When you cut a pipe you have no spigot left except on the end you do not wish to use, for the want of which it becomes very difficult to make a tight and satisfactory joint. The liability of shoving oakum through the space between the ends of the pipe and the shoulder of fitting into the pipe, and the pipe pulling apart, is a serious objection to a joint without a sprigot end, which should and could be remedied.

It is well known to practical plumbers that it is not a difficult matter to make tight joints with lead and oakum; but it is equally well known to the writer of this paper that a large proportion of our best workmen do not give this department of the plumber's trade the attention its importance demands, but are so anxious to polish up and overcast joints that catch the eye, that the matter of perfectly tight soil and waste pipe is not considered at all. This, however, is not the fault of cast pipe, lead or oakum, but is another illustration of how a plumber will put in three times the amount of time necessary to make good work, either doing nothing, or making the helper give the joints a few ineffectual taps with a calking chisel, or half doing the work himself, thereby bringing this excellent joint and pipe for drainage work into disrepute, and justly so if they do not make this joint all it is capable of receiving at their hands, for it is a fact that I never yet have seen a soil-pipe put up without reference to a water test, that did not leak in a majority of joints when the same become stopped, thereby putting a pressure of water on the stack. There are no places or conditions under which a perfectly tight and satisfactory job cannot be constructed with cast iron pipe and lead joints, if the plumber doing the work will only spend one-half the time doing it that he does fooling around, scrubbing up parts of the work that are not only unnecessary and uncalled for, not wanted or paid for by anybody else than the man least able to afford such extravagance, the master plumber; for it is a fact that nine-tenths of the people employing plumbers, either by day or contract, do not intend to pay for fancy work at fancy prices. They understand the importance, in a financial sense, of having two-thirds of the plumbers in their city or town estimate, and thereby getting the closest possible figures and giving the work to their favorite, providing he will cut the figures still a little lower to insure a good job and their lasting friendship.

But we were speaking about conditions for doing good work. I must say that wrought iron pipe is much more difficult to handle than cast when large sizes are required, unless buildings are especially constructed for its size. It is quite a difficult matter to revolve large size fittings between joists set as they usually are, 16, 14 and 12 inches apart from centre to centre. Again, when soil pipes come in brick walls in chases left by the bricklayers 4 by 8, at the commencement of same, and, as frequently happens, 4 by 3 at finish, or worse, covered after second story is reached and entirely abandoned. In addition to this, the trimmers around chimney breast on opposite sides of walls even, often make it necessary to do so much cutting away of mason work in order to turn the fittings into proper position, that does not appear at all necessary when the work is finished; and as plumbers, as a rule, were never known to even make an attempt at replacing anybody else's work after serving their own convenience, it will become then a very expensive item in the use of wrought-iron pipe, that does not come with the use of cast-iron pipe, to say nothing of the annoyance of explaining the necessity of doing so much cutting to the ever officious boss carpenter or architect, who always make a "royal kick" whenever cutting is to be done.

The next point I wish to consider for a few moments is the difference of support given the water-closets in one system in comparison to that given in the other. To give this a fair explanation I will take you down into the cellar and ask you to accompany me in your mind's eye from the one-quarter bend or soil-pipe ell, according to the kind of pipe you may be using, and get a few common sense facts. It has been claimed by some one, that with wrought-iron pipe a system can be constructed entirely independent of the floors or walls of a building, so that in the event of floors or walls settling the pipe would remain intact. The one-quarter bend or soil-pipe ell, either one, must necessarily have a footing. Usually it is secured on the footings of the wall itself. Now, if one settles the other must follow. But suppose it has a separate foundation, it will be so near that of the foundation itself that if the wall should settle the other must be affected by its settlement. The water-closet being bolted to this by means of flanges free and clear of the floor, would not be affected by such settlement. Let us see how this looks to a practical man, forgetting for a moment the theoretical part of the plumber's trade, of which there is so much and still more to follow.

The closet set on a flange that cannot settle with the building must necessarily rise above the floor when it takes a drop of a few inches over night, if such a thing were possible. The closet tank is always fastened in some manner to the walls of the building; at least I have never yet seen any that were fastened to the soil-pipe, either cast or wrought. The closet bowls and connections being brass and earthernware, do not make a support capable of resisting very much strain, and being connected to the tank with a stiff lead pipe, made more stiff by numerous tags, the plumbers delight (I say delight because they love to throw away valuable time so well that they often put on a lot of tags that are imperatively necessary, according to their own views, that never get a screw put into them or even see the necessity for one). I ask what is to keep the connection to closets from breaking when the tanks settle with the walls and the closets remain intact? If this rigid construction is all that is claimed for it, which I doubt, heavy lead bends and traps, or other suitable closet connections flanged into lead safes and soldered, is the only safe and satisfactory manner of setting closets, to my way of thinking. Even admitting that all buildings do settle more or less, the annoyance of coming just right height to floor levels with wrought-iron pipe is one of the most aggravating things connected with its use, either being 1½ inches too low or 1¾ too high, more or less above the floor; and to change either involves taking down a whole length of pipe, sending it away to some power machine to be cut off and rethreaded, stopping further progress of the work until it returns, necessitating a delay of half a day or longer, unless you are prepared with suitable tools to cut and thread four-inch wrought-iron pipe, which would be only half the machinery necessary, as I despair of ever educating the present generation of plumbers to even make the attempt to do this by hand power.

Cast-iron pipe with lead bends have a leeway of several inches, which are taken advantage of in coming to floor levels, making it a simple matter to come to floor lines without trouble.

In the matter of expense as compared with cast-iron pipe of the same size, everything else being considered, I believe it is 30 per cent. more costly, and may be 50 as applied to soil-pipe, extra time and fitting being necessary to complete the work. I have had large and extended experience with the use of wrought-iron pipe for drainage purposes all over this country, and while it is a good thing for the purpose, with the exceptions I have mentioned, and makes a tight and satisfactory job, I wish to say, without prejudice to the use of wrought-iron pipe, that I see no reason to substitute it for cast-iron extra strong pipe and fittings. Standard pipe and fittings should not be used anywhere except for vents above highest fixtures and high water levels.

I will say, in conclusion, that I believe good workmanship, honest manufactured cast-iron soil pipe tested at factory and again in soil-pipe stack with cold water pressure, is good enough work for anybody or anywhere, less than it would be a dangerous piece of work.

* Paper read before the National Association of Master Plumbers June 26, 1889, by F. J. Beesly, of Kansas City.

TESTING FOUNDATIONS.

THE following simple method of investigating the ground underlying foundations is given by a correspondent of London *Engineering*: Take a worn-out locomotive boiler flue, and cut slots about ¾ x 6 inches in a spiral winding around the flue. Then sharpen one end of the flue to a cutting-edge and put a heavy screw-cap on the other end. This cap should be not less than three inches long and solid for 2 inches of its length. In using the testing apparatus drive the flue down with a heavy sledge at the same time turn the pipe with a large chain-tongs. The pipe can be lifted again by a lever or a derrick of portable form. When the tube is withdrawn the character of the material penetrated can be examined through the slots in the sides. A locomotive boiler-flue is generally about 11 feet long, but this is usually sufficient to test the foundations of light structures.

PLUMBING REGULATIONS.

WE have not at hand a copy of the Toronto plumbing by-law owing to the neglect of the proper authorities to send them out to interested parties, and cannot state to what height the plumbing by-law requires that soil pipes should be carried. We do know that it is generally considered necessary that the soil pipe should be carried high enough to discharge above roof, which should mean the highest portion of any roof on the house, and at some distance from windows. Many soil pipes are carried up no higher than a foot or so above the roof of the addition, and far too often finish just below the sill of an attic window. We saw a soil pipe continued in galvanized iron above the roof which is not according to the by-law. The plumbing inspectors should see that the spirit of the by-law is carried out in respect to the above, and if they consider it is not sufficiently explicit, they should bring the matter before the proper authorities and have the by-law amended. It is most important that the end of all soil pipes should be extended high enough above the roof to allow of the air discharged being carried into the atmosphere and not at a point where it will lie in a solid body and very possibly overflow into some window. The by-law certainly does not allow of any soil pipe being extended by means of galvanized iron pipe, and that has been done on work completed this year. It may be that the inspectors have far too much work to oversee, but that does not excuse them or those over them if bad work is allowed to be done, while the people are under the impression that all plumbing work is being done in the most approved manner.

The Sanitary Engineering and Supply Company, limited, is the name of a new Toronto organization.

An Ottawa despatch says representations have recently been made to Hon. John Carling that in future the control of the local health boards should be assumed by the Dominion Government instead of the Provincial Legislatures, and that the Dominion Government should appoint inspectors of cattle for sanitary purposes.

It is impossible to have too much sunlight or fresh air, says a writer in the *Popular Science Monthly*. Every living room and every sleeping room, when possible, should face the south, and the radiant energy of the sun will be found to induce such a healthful and vigorous physiological action of all the organs of the body, that many doctor's and druggist's bills will be saved, and, in a short time, bring about that greatest blessing of life—a state of good health.

A test for the purity of drinking water is given as follows by Professor Angell of the Michigan University: "Dissolve about half a teaspoonful of the purest white sugar in a pint bottle completely full of the water to be tested, and tightly stopped; expose it to daylight and a temperature up to 70° Fahr. After a day or two examine, holding the bottle against something black, for floating specks, which will betray the presence of organic matter in considerable proportion."

Modern Light and Heat remarks that the value of real estate for offices in crowded cities has been materially enhanced by the introduction of the incandescent light. The dimly lighted rooms on lower floors, constantly increasing in number as daylight is more and more cut off by new buildings that appear to grow a story in height each year, can be readily let when supplied with incandescent light instead of suffocating gas. The time is not far distant when electric lights will be as much a *sine qua non* in all business buildings as the passanger elevator is to-day.

The Vermont Microscopical Association has just announced that a prize of $250, given by the Wells & Richardson Co., will be paid to the first discover of a new disease germ. The wonderful discovery by Prof. Koch of the cholera germ, as the cause of cholera, stimulated great research throughout the world and it is believed this liberal prize, will greatly assist in the detection of micro-organisms that are the direct cause of disease and death. All who are interested in the subject and the conditions of this prize, should write to C. Smith Boynton, M.D., Sec'y of the Association, Burlington, Vt.

The new Vancouver Coal Co. is experimenting with a large quantity of clay that is found on the Nanaimo River road, as to its adaptability for making brick.

As a result of the opening of the new C. P. R. short line to New Brunswick, Messrs. Emmerson & Fisher, manufacturers of slate mantels, at St. John, hope to develop quite an extensive trade with the Western Provinces.

The contract for the supply of sandstone for the three fronts of the new H'y Morgan & Co. dry goods warehouse has been given to W. McNally & Co., Montreal, the quantity required being over 30,000 cubic feet. The stone is coming from the celebrated "Haytor" English red sandstone quarries, and is of a rich brownish red, even texture and fine grain, and promises to make one of the handsomest business buildings in Montreal.

The North American Mining & Cement Manufacturing Co., of Owen Sound, Ont., have made application to the Deputy Commissioner of Patents at Ottawa, to have annulled the patent granted to Fred. Ransome, of Surrey, Eng., in August 1886, for a cement manufacturing machine, on the ground that the machine was not manufactured in Canada within two years after the issue of the patent. The applicants purchased one of these machines, but had no sooner erected it in Canada than Mr. Ransome demanded a royalty of $1,000. This the company refuses to pay, for the reasons stated.

MANUFACTURES AND MATERIALS

THE CANADIAN SLATE INDUSTRY.

OUR article on the slate industry in Canada, which appeared in the CANADIAN ARCHITECT AND BUILDER for June, seems to have awakened considerable interest, judging from correspondence on the subject which we have since received. To persons who may not have read the article in question, we would say that it referred to the complaint of a number of Canadian roofers, that they are placed at a serious disadvantage owing to the refusal or inability of the Rockland Slate Co., of Quebec, to supply them with slate, rendering it necessary to import from the United States subject to an import duty of $1.00 per square. It was pointed out that the large and rapidly-increasing demand for slate opened the door for profitable competition with the Rockland Co., in its Canadian production; also that at Melbourne, Quebec, there is a quarry of large extent and excellent quality, partially developed which, owing to the death of its owner, can now be purchased at a very moderate figure, and would undoubtedly richly reward a company with the capital and knowledge requisite for its operation.

Believing that by calling attention to what seems to us to be a rare opening for profitable business enterprise, we shall be doing the roofers and slate consumers of Canada a service, as well as assisting the development of the country's industries, we append a few additional particulars which have come into our possession during the present month.

The present protective duty on slate is $1 per squar , instead of 80 cents per square as previously stated. While the present demand is brisk, it would undoubtedly increase many fold if production were stimulated by competition. Owing to the difficulty experienced at present in getting a supply, architects and builders are obliged to specify other roofing materials instead of slate. On this point a member of a Canadian roofing firm recently wrote as follows:

"We have to book our orders with the Company about two months before the slates are required. They had orders for over 6,000 squares on their books on the above date, and more coming in by every mail, with letters simply blackguarding them for the delay in executing former orders. Six thousand squares per month does not represent the actual demand for slate, because we roofers advocate galvanized iron and tin wherever we can, simply because we cannot get slate when required. Architects and builders prefer slates to galvanized iron and tin if they could get them, because they are cheaper and more durable.

At present the slates from the United States are kept out from the Canadian market by a duty of one dollar per square, but if some other companies do not open up new quarries, we slaters will have to petition the Government to take off the duty from slate. The average price of the New Rockland slate on board cars at G. T. R. siding is four dollars and 10 cents per square for No. 1, and $3.10 per square for No. 2.

You will find enclosed quotations I received last spring from the largest firm of slate manufacturers in the States; their quotations are for sea green slate which is far inferior to the Canadian slate on account of its fading color, yet it cost $4.71 per square, duty paid, at Sherbrooke, P. Q. Add 25c per square freight from Sherbrooke to Richmond, $4.96 per square, 86 cents per square higher than the New Rockland slate.

Five years ago it cost the New Rockland Co. to produce slate ready for market, $1.75 per square, and I believe it costs about 10c. or 15c. per square less at present. Of course if you ask the Company if they are making money, they will soon tell you they never received a cent dividend from this quarry, but is it likely that a man of business like Geo. A. Drummond, who is president of the Company, and also president of the Board of Trade, Montreal, would invest $100,000 to build a railway to the quarry after running said quarry 20 years, without a cent dividend? I think I know this Company too well to believe them capable of such folly. I would like to see a Company formed to work the Melbourne quarry. In my opinion it is a far better quarry than the New Rockland. I bought some of the slate they had on hand when Mr. Walton died. I could not wish for better slate. They have better clearage than the Rockland slate, although both quarries are on the same formation.

$25,000 or $30,000 working capital would be plenty to develop the Melbourne quarry, and put it in a shape to turn out two or three thousand squares per month. All the buildings are in good repair. I believe fifteen or eighteen of the houses used to rent for $6 per month. There are on the premises a very good steam engine and steam pump, both in good order, and a large quantity of tools and rails, etc., in fact almost everything required to commence operations at once.

I am informed by quarrymen who worked for Mr. Walton, that if he had employed practical slate men as managers, that quarry would be a good paying concern to-day, such as New Rockland is."

We understand that slate has been produced at the Melbourne quarry at $1.75 per square, at which price the contractor is said to have done well. This means $2 or $2.25 per square on G. T. R. cars. The New Rockland Company is now charging for No. 1 slate $4 per square, and for No. 2, $3 per square, and in addition 40 cents per square freight to the G. T. R. over their own tramway. This slate band is said to be the best and probably the only valuable one in Canada. One and a half miles of the band runs through the Melbourne property. In the opinion of those familiar with the business, the production of this property should easily be made 1,000 to 2,000 square, in one year, which, at a profit of only $1 per square, the amount of the protective duty, would net a handsome profit. New Rockland quarry, we are informed, now produces 3,000 squares per month. On the basis of $1 profit per square, we believe a Company with $50,000 capital, might reasonably hope to realize the following result from the operation of this property:

Purchase price, say $25,000; working capital, $25,000..	50,000
Interest	3,000
1,000 squares for 6 mos., at $1 profit	$ 6,000
2,000 " " " " "	12,000
	$18,000
Less interest on $50,000 invested	3,000
	$15,000

This result should be worked out owing to the present state of the slate trade and the developed state of the property. We should like to see the right person or persons avail themselves of the opening, reap advantage themselves, and remove the disabilities under which the users of slate in Canada are at present laboring.

CLAY ROOFING-TILE.

IN a recent number of the *Brick, Tile and Metal Review*, we find the following account of the manufacture of roofing-tile as carried on at Akron, Ohio. Ordinary brick clay is used. "The grinding and tempering is done in tracers, such as used for sewer pipe. When tempered, whatever is put into the cylinder is forced out at the end of the stroke in a series of parallel plates, about 6 inches wide by ⅜ inch thick, and extending along until cut up in lengths. Considerable oil is used to keep the clay smooth and to keep the freshly pressed plates from sticking. These plates are adjusted one after another, on a series of disks arranged on the circumferenee of a circular revolving disk. This disk moves through one-sixth of its circumference at a stroke, boring in succession each plate of clay spread out on its table under a compound piston. This piston is arranged to cut off the edge of the plate in a symmetrical shape, and then to press it into the required shape. The pressed tiles are removed and set in piles to dry. Drying takes about two weeks in a steam-heated chamber, as the oil used in the pressing of the clay hinders the escape of the water. They are finally piled in loose order in a kiln to a depth of about 6 feet, and subjected to a light burn. The kilns employed are circular downdrafts. The ware is of several classes. Shingle tile, which are more like shingles than anything else, are slabs of burnt clay 12 x 6 inches x ¾ inch, with holes in proper places for nailing them to the roof. Their uses are as nearly like those of a real shingle as well can be. About five inches of each tile are exposed to the weather. The so-called 'diamond-tile' are made to hook into each other, but are also supplemented by nails. They are more ornamental than the shingle tiles, but as they are more dependent on each other for support, they are not so durable or strong. One of the chief objections to a tile roof is its weight; a 10-foot square of plain shingle-tile weighs about 1,100 pounds, and the same area of diamond tile weighs from 650 to 850 pounds. The advantages claimed for them are durability, beauty, and immunity from danger by fire or lightning."

THE EFFECT OF FROST ON STONE.

THE principal danger of exfoliation arises from the expansion of the moisture contained in the stone under the influence of frost, says Mr. G. R. Burnell in a recent issue of one of our foreign exchanges, and a very excellent process was invented by M. Brard for the purpose of ascertaining the probable extent due to this cause. M. Brard, in his experiments upon the resistance of stones, caused them to be boiled for half an hour in a saturated solution of the sulphate of soda. They were then withdrawn and allowed to stand in a flat vessel, at the bottom of which was a small quantity of the same solution, the first efflorescences were washed off, and the degradation of the stones during the next five or six days, under the effect of the continued efflorescence, was taken as an indication of the probable extent to which they would be affected by frost. In the first volume of Rondelet's "Art de Batir," page 307 (edition 1842, Paris), M. Brard's process is described in detail; but some very curious experiments recorded in Vol. 7, "Ire serie des Annales des Ponts et Chausses," by M. Minard, together with an article by M. Vicat, inserted in the same volume, throw very considerable doubts upon the exact amount of dependence to be placed on its indications. M. Vicat, indeed, very properly observes that it still remains to be proved that the expansive action of water in freezing is identical with that of crystallization, which can only produce energetic effect at temperatures between 68° and 86° F. According to this very accurate observer, stones which are exposed to a southerly aspect, on the north of the equator, are more affected by frost than those exposed to the north; and the most efficient protection to materials of this description of a porous nature is a coating of oil paint or any other fatty pigment which prevents moisture from being driven or absorbed into the stone. M. Minard recommends that stone be quarried in the spring, and not employed in a building until it has been exposed to the effect of one winter.

CONTRACTS

CONTRACTS AWARDED.

Mr. W. Harris, of Barrie, has the contract for the alterations to the Bradford High School.

CLINTON, ONT.—Mr S. S. Cooper, has been awarded the contract for the new Baptist church.

COLLINGWOOD, ONT.—Messrs. Kerr Bros. of Walkerville, have received the contract for the new system of waterworks.

PARRY SOUND, ONT.—The contract for the erection of the new Court House has been awarded to Mr. George Ball, of Barrie.

ALMONTE, Ont.—The contract for the new Post Office building has been given to Mr. R. Cameron, who is to build it of stone for $13,395.

Mr. John Stewart, of Hamilton, has been given the contract to construct the superstructure of steel iron and timber of the new King st. Subway, at the price of $84,666.

SARNIA, ONT.—The contract for building the new high school has been given to Andrew Lockhart, for $19,000. The cost of the building when completed will be $25,000.

VANCOUVER, B. C.—Mr. Tompkins, C. P. R. contractor, has instructions to rebuild the front of the Durham block, and will also proceed with the erection of the Sir Donald Smith block on Granville street.

TORONTO, ONT.—The city Council has given the contract for 4,600 feet of 48-inch steel pipe to the Peterboro' Bridge Co., at $7.06 per foot; for 6,000 feet of 60 inch steel pipe to John Abell, Toronto, at $9.89 per foot.

CONTRACTS OPEN.

LUCKNOW, ONT.—A system of waterworks is to be put in.

BERLIN, ONT.—A sewerage system to cost $30,000 will be put in.

PRESTON, ONT.—It is proposed to erect a large summer hotel here.

STRATFORD, ONT.—Tenders have been called for the new hospital.

MIAMI, MAN.—Mr. Cowan of Headingly is about to erect a $2,000 hotel.

GALT, ONT.—Knox church will build a new school room to cost $10,000.

QUEBEC.—Plans are being prepared for the re-building of the Hotel Dieu.

SARNIA, ONT.—Lambton County Council has decided to erect a house of refuge.

ORILLIA, ONT.—A hospital to be built by a joint stock company is spoken of.

PORTAGE LA PRAIRIE.—The site for the new Lansdowne college has been secured.

BRANDON, MAN.—Plans are being prepared for an addition to the Presbyterian church.

PERTH, ONT.—The advisability of adopting a system of water works and sewerage is being considered.

ASHBURNHAM, ONT.—The sum of $4,500 has been appropriated for the erection of a new town hall.

KEEWATIN, ONT.—It is reported on good authority that the C. P. R. will erect a new iron bridge soon.

BRIDGEWATER, ONT.—The Methodist congregation will rebuild their church, recently destroyed by fire.

GUELPH, ONT.—Mr. James Goldie will erect a new residence. The material will be Credit Valley stone.

BRANTFORD, ONT.—Orders have been given by the Militia authorities to have the plans for a new drill shed prepared.

MITCHELL, ONT.—The sum of $4,000 has been voted for improvements to the electric light and water-works systems.

GALT, ONT.—Messrs. Goldie & McCulloch have offered a free site for a hospital provided the building is commenced at once.

WINNIPEG, MAN.—Messrs. Ashdown, Whitla and Chown have each subscribed $1,000 towards the erection of a new Wesleyan college.

SMITH'S FALLS, ONT.—The Public School Board have purchased a site on which they propose to erect at once a new school building.

ST. THOMAS, ONT.—A joint stock company has been formed with a capital of $10,000 to construct a new Opera House on the corner of George and Talbot streets.

PORT HOPE, ONT.—A special Committee has recommended the Town Council to issue debentures to the amount of $20,000 for the construction of a new water-works system.

NEW WESTMINSTER, B. C.—It has been decided to secure a supply of water for the city from Coquittam Lake. The necessary works are expected to cost $400,000, and are to be constructed under the control of a Commission.

OWEN SOUND, ONT.—A site has been purchased for a new Methodist church here and operations will be begun at once.—Mr. J. C. Forster, architect, is preparing plans for a stone Sunday School for St. George's Church, which is estimated to cost $5,000

TORONTO, ONT.—The following building permits have been issued from the office of the City Commissioner since last issue: P. H. Drayton, alterations to residence, 127 Bloor street, cost $1,000; Mrs. Cornish, 2 story brick dwelling, College street, cost $1,000; J. H. Lennox, pair 2 story r. c. dwellings, Ontario street, cost $2,400; John Newell, 2 story r. c. dwelling, Duke street, near Ontario, cost $1,400; Darling & Curry, hospital for sick children, College Ave., cost $7,500; Mrs. Mary McCarron, 3 story brick addition, to hotel, corner Queen and Victoria, cost $8,000; L. Sievert, 2 story brick dwelling, Terauley street, cost $1,200; Toronto Real Estate Co., alterations to 383 Yonge street, cost $4,000; T. H. Dallmadge, brick addition, King street west, cost $3,000; J. Reid, 2 story brick dwelling, Sussex Ave., cost $3 000; E. Carveth, 2 story brick dwelling, Markham street, $3,000; John Munro, 2 story and attic dwelling, Orde street, $7,000; John Low, three 3-story stores, Spadina Ave., cost $7,500; John Dancy, alterations, Church street, cost $1,000; Fleming Estate, three 3-story brick stores, Elm street, cost $11,000; F. Breen, 2-story brick addition, St. George street, cost $2,000; T. Baylis, 2-story and attic brick dwelling, Elizabeth street, $4,500; H. Davis, 3-story brick store, Queen street west, cost $30,000; G. M. Hunter, 2 story and attic brick dwelling, Willcox street, cost $3,000, and 2-story brick dwelling, Classic Ave., cost $5,500; J. V. Hunter, 2-story and attic dwelling, Classic Ave., cost $2,800; W. S. Thompson, additions to two stores, York street, cost $8,000; Wm. Davies, 2 story brick dwelling, Jarvis street, cost $11,000; J. W. Gray, 2-story brick addition, Murray street, cost $1,000; Jackson Estate, 2-story warehouse, Bay street, cost $8,000.

Ex-Mayor McClay of Mitchell, Ont., will remove his planing mill and sash and door factory to Woodstock.

Messrs. C. B. Wright & Sons, Hull, Que., have completed their new factory for the manufacture of Portland cement.

The Globe furniture Co. of Walkerville, Ont., has applied for incorporation, with a capital of $50,000, for the purpose of manufacturing church, school and hall furniture.

The Canada Galvanizing and Steel Roofing Company, of Montreal, has been incorporated with $50,000 capital stock, for the purpose of manufacturing galvanized steel, metal roofing and general metal working.

The value of the building stone produced in the United States in 1888 is $25,000,000, or $500,000 more than in the preceding year. Brick and tile were manufactured to the value of $48,213,000—a small gain over 1887.

Granite quarries have recently been opened near Lakefield, Ont., and on an island called Eagle Mount in Stoney Lake, by Messrs. Murray & Fraser, of Toronto. The latter quarry will be operated only in summer, the product being shipped by water.

HEATING AND VENTILATION OF SCHOOLS.

THE following is taken from the Toronto *Globe* of June 21, and is from a report of the proceedings of the Toronto Public School Board of the evening before:

SMEAD-DOWD HEATING SYSTEM.

On the desks of the members were printed copies of the report of the deputation appointed by the Board at its meeting held March 6, 1889, to visit some of the principal cities of the United States with a view to gathering such information as would be helpful in the better construction, heating and ventilation of school buildings, and for the better arrangement and management of the schools. The report says the Committe visited the following cities in the order named: Detroit, Toledo, Cleveland, Pittsburg, Allegheney City, Cincinnati, Washington, Baltimore, Philadelphia, New York, Brooklyn, Jersey City, Albany, Troy, Utica, Syracuse, Rochester, Buffalo, in the United States, and Hamilton, Canada.

The Committee, on reaching a city, sought out the officers of the Board of Public Instruction, and from them learned the location of six or eight of those they considered their best school buildings in point of construction, and the most perfect as to heating and ventilation.

Heating and ventilation, as perhaps the most important part of school construction, received most careful attention. Particular inquiries were made in this regard of the schools visited. The Committee asked what system of heating was in use, with a view to ascertaining how evenly the heat was distributed throughout the whole area of a class room, and how often the atmosphere was changed during a school session of an hour and a half. They took down the reading of the thermometer at the floor, ceiling, and midway between, and also measured with the anemometer the volume and velocity of the warm and fresh air at the intake, when there was any, and the foul air at the outlet.

The report of the Committee is comprehensive and takes in every part of school construction and management, and naturally considerable attention is paid in the report to heating and ventilation as follows:

To gather information under this head, your Committee gave its very best attention, making careful examination and tests of the various systems. We found nearly all the cities in the same position, having a few years ago in a number of the schools substituted steam for stoves, while now they are substituting the Smead system for steam, New York and Brooklyn being the exceptions. Though these cities pride themselves in having (with their present mode of using steam apparatus) the best heated and ventilated schools on the continent, the result of our examination proved quite the reverse

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In ordering change of address give the old as well as the new address. Failure to receive the paper promptly should be reported to this office.

ADVERTISEMENTS.

Prices for advertising sent promptly on application. Orders for advertising should reach the office of publication not later than the 12th day of the month, and changes of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The Ontario Association of Architects has appointed the "Canadian Architect and Builder" its official paper.

THE Commissioner of Public Works of the city of New York, has set a good example to his contemporaries in other cities, by adopting the suggestion of the Local Board of Health to compel contractors making excavations in the city for building or other purposes, to use disinfectants on the work.

THE cities of Toronto and London, Ont, have decided to erect crematories for the disposal of garbage. The health of the citizens of these cities has long demanded action of this character, and they should find cause for congratulation even in its tardy arrival. It is to the credit of London, that although the smaller city of the two, it took the initiatory step in this important reform.

IN commenting on the conditions of the recent competition for plans for a new Court House building at Woodstock, Ont., we pointed out the extreme difficulty, if not the impossibility, of constructing a building which should contain the accommodation required, for the sum of $60,000, the limit of cost fixed by the county authorities. This view seems to be justified by the fact that it has been found impossible to erect the building in accordance with the preferred design of Mr. Jas. Balfour, architect, for less than $100,000. Mr. Balfour no doubt had in mind the limit of cost in the preparation of his design, and endeavored to approximate as closely as possible thereto, but the extent of the requirements as compared with the fixed appropriation for the erection of the building, seems to have rendered the task impossible.

WE were somewhat surprised to be shown a copy of a letter from the Stonecutters' Union to different parties in Toronto, stating that the Union intended to have a picnic and that it took this means of allowing the parties to whom those letters were addressed the opportunity of contributing to the picnic funds. That a body of men of the standing of the stonecutters in Toronto, and earning the wages which they do, would so far forget their manhood, is more than we can understand. They surely do not propose to enter into competition with the Fresh Air Society and seek to divert from that Society funds which it requires for the most excellent work which it is doing in sending children who are sadly in need of the invigorating influence of fresh air of the country, where they may enjoy it for a few short hours. One would suppose that men earning 40 cents per hour, and having more work than they can do, would scorn to have others do for them what they are so well able to do for themselves.

THE plea is being urged by a Toronto newspaper that the street cars should be run on Sundays in order that tradesmen, clerks, etc., might recuperate their wasted energies by spending Sunday at High Park or some of the other suburban pleasure resorts. While there may be some ground for this appeal, we are disposed to coincide with the many who have expressed the opinion that the running of street cars on Sunday would open the door for the indulgence of vicious practices which under existing circumstances cannot be carried on within the limits of the city proper and under the watchful eye of the police. We fear that whatever benefits might be conferred by the proposed new departure, would be more than counterbalanced by resultant evils. A much better plan in the interests of the masses would be the establishment of a number of parks of medium extent throughout the thickly-populated districts of the city. These could be reached and enjoyed with little exertion, and without entailing upon a considerable number of persons the necessity of Sunday labor.

A MEETING of the Board of Directors of the Ontario Association of Architects was held in Toronto on June 16th, to arrange preliminaries in connection with the approaching annual convention in November. Some eight or ten papers on a variety of interesting subjects have already been promised. It is proposed to hold an exhibition of drawings at the Canadian Institute rooms. Members of the Association are urged to assist in making this exhibition as large and interesting as possible. Those who may wish to send drawings for exhibition should correspond with the Secretary of the Association on the subject at as early a date as possible. It is intended that the convention shall extend over at least two days, and shall include a dinner on the evening of the first day. The Secretary has been in communication with the promotors of the movement in England for incorporation, and from this source has gained information which will prove of much service to the committee appointed by the Ontario Association to further similar objects in Canada. This committee we are pleased to learn, is making satisfactory progress with the work assigned to it.

ANOTHER example of the ignorance or carelessness displayed by contractors in estimating for work put up to tender, is to be found in the bids sent in recently for the erection of a new public school building in Toronto. There were sixteen bids for the masonry work. Between the highest and lowest of these, there was the startling difference of nearly $3,000, the highest being $10,750, and the lowest $7,987. Again we ask, is it a matter for wonder that there are so many failures in the ranks of the contractors? While in other branches of business the keenness of competition, reducing profits to a minimum, has led men to study more closely the details of their business, and exercise the greatest caution in their calculations in order that the small margin of profit may not be lost, our master builders adhere to the old slipshod methods of a past age. In the easy-going times when profits were sufficiently large to guarantee the most ignorant and careless against loss, men might pursue such methods and even make some money, but it cannot be done now, and the sooner Canadian contractors come to this understanding the better it will be for their chances of success in life. It may safely be assumed that in no branch of business is competition more keen or the margin of profit more narrow, than in the building trades. In many cases a difference of 10 per cent., not to speak of 30 per cent., is sufficient to turn profit into loss. In view of this, the contractor who hopes to succeed must substitute for guess-work in estimating the most approved methods of arriving at exact calculations.

THE distinguished Scientists composing the American Association for the advancement of science will convene in the city of Toronto, on the 27th inst. Daily sessions will be held from that date until September 7th. The morning and afternoon meetings of the Association and of its Sections will be held in the University Buildings, Queen's Park, where will also be the offices of the Permanent and Local Secretaries during the meeting. The Council will meet at the Queen's Hotel at noon on Tuesday, Aug. 27th. The Association will be called to order in General Session, at 10 a.m., on Wednesday, August 28th, in the University Convocation Hall, by the President, Mayor J. W. Powell, of Washington, who will resign the chair to the President elect, Professor T. C. Mendenhall, of Terra Haute, Ind. After the adjournment of the General Session the Sections will organize in the respective halls. In the afternoon the Sections will meet and the Vice-Presidents deliver their addresses. In the evening Mayor Powell will deliver the Presidential address in the Pavilion, Horticultural Gardens. The meetings of the Sections will be held on the following days (except Saturday and Sunday) until Tuesday night, when the concluding General Session will take place. Saturday will be devoted to excursions, complimentary to the Association, including one to Niagara Falls and one to Muskoka. Arrangements are being made for an excursion, starting Sept 3 or 4, to the Huronian District, and also one to the Pacific Coast. During the week two popular lectures, complimentary to the citizens of Toronto, will be given by prominent members of the Association. The usual daily programmes will be issued by the Local Committee during the week of the meeting.

DURING the past few days there have been two most serious scaffold accidents in Toronto. One resulted in the death of a bricklayer, and the last one may also be attended with equally serious results. Greater care should be taken in the erection of scaffoldings. Where men's lives are endangered it does not pay to adopt a policy of economy in the erection of scaffolds, nor does it do to build them in a careless manner and trust to their being sufficiently strong to answer their purpose. The amount saved in material and time through erecting unsafe scaffolds will not make any man rich. The scaffolder should also remember that on him depends the lives of his fellow-workmen, and that he should do his work well and see that his employer furnishes him with the necessary material for the erection of safe scaffolding. The foreman on the work should see that all scaffolds are amply strong for their purpose, and properly erected. It may do for the workmen to accept a scaffold as safe, but no foreman should do so. He should examine all scaffolds with the especial object of seeing that they are properly erected, and that all material used is perfectly sound. A cry has been raised for the appointment of a scaffold inspector because a few accidents have occurred which might have been prevented by ordinary care and a knowledge of material on the part of the scaffolder. One would be led to suppose that an inspector would be able to stop the erection of dangerous scaffoldings throughout the city. How many have any idea of the number of scaffolds which are erected in Toronto during one season's building, or of their very temporary character? The most dangerous scaffolds, and those which have been the cause of nearly all the accidents, have been scaffolds erected to do some small piece of work, and which will consequently be removed within a few hours, or at the most a day or two. Such scaffolds are generally erected in as slight a manner as possible, and often come down before they have fulfilled the service for which they were erected. Would it be possible for an inspector to examine every one of these scaffolds throughout the city? And in case he was able, who would be held responsible? as many of these erections are put up and taken down by the workmen themselves without their employer knowing anything about the matter. It may be safely said that accidents to large or important scaffoldings are very rare, and to oversee such erections would be about all the work which an inspector would be capable of doing beyond what indirect good he might effect by the fact that he might possibly come along and find an unsafe scaffold, and then be able to make an example of an employer or of a workman who did not value his own life sufficiently to observe ordinary care in the erection of a scaffold.

With some exceptions, men who work on scaffolds should be able to judge to some extent as to what is a safe scaffold, and if such is the case, why should the general public be put to the expense of seeing that they do not endanger their own lives? If a bricklayer or a carpenter is not capable of judging the strength of a scaffold, who should be? We do not consider that a labourer has that knowledge, but he is never required to go where the properly qualified mechanic does not precede him or follow very soon after. If it was distinctly understood that no labourer should go on a scaffold until the foreman had inspected it and his permission had been obtained, every precaution would be taken that is reasonable for the protection of the lives of men who work on scaffolds. The foreman, along with the scaffolder, should then be held responsible for the occurrence of accidents. We do not believe in the policy of protecting every man from what to a large extent would not occur if he used due care and ordinary intelligence. Individual responsibility should be made a factor in men's lives, instead of encouraging them to believe that their steps should be surrounded by all manner of safeguards to protect them from their own ignorance or carelessness. What the city requires more than a scaffold inspector is an efficient and sensible building by-law, with inspectors to see that its provisions for safe building are faithfully carried out. Where there is so much unsafe and reckless building it is only natural that inferior scaffolds should be erected. A careful examination of buildings and scaffolds will show that good scaffolds are used in the erection of solid buildings, and bad scaffolds for "jerry" buildings. It is only natural that where men are allowed to erect very inferior buildings for the supposed shelter of their fellow men, they will consider any manner of scaffold strong enough. Many more lives are endangered and lost through bad building than through bad scaffolding, and yet not one word is spoken to alleviate the evil. And the lives thus lost did not in any way contribute to the result, except in so far as they may have accepted as true the statement that all was right when all was wrong.

If inspectors are to be appointed let them attend to the work which most requires attention, and not to minor matters, simply because they are brought vividly to mind by unfrequent and thus startling accidents. Scaffold accidents can be put a stop to in very short order by making those who are responsible suffer the consequences of their own carelessness or ignorance, and the persons whom we would hold responsible are the contractor, the foreman and the scaffolder. But so long as little or no effort is made to place the consequence of accidents on the right shoulders, so long will they happen. Those in authority should have persons to examine into any accident where lives have been endangered, even though no fatality results. Waiting until some one is killed before investigating an accident, is on a par with locking the stable door after the horse has been stolen. With a stringent building law and competent building inspectors, no unsafe building would be erected, and few if any dangerous scaffolds. The last two accidents could have, and very likely would, have occurred, even though there had been an inspector of scaffolds, and he could not have been held responsible, as no man or set of men could be expected to see that every put-log, scaffold pole and plank that enters into the erection of the scaffolds of a city is perfectly sound. It would require a tremendous amount of time to examine every put-log to see if it was sound, and not attacked by dry-rot. That can only be done by the man who actually erects the scaffold, as he handles every piece, and he, before all others, should be accountable for all bad materials entering the scaffold.

The suggestion has been made that architects should be held responsible for the strength of scaffolds necessary to the erection of buildings according to their designs. This would only be a partial remedy, as possibly not one half of all the buildings erected are under the supervision of an architect. However, it would not be just to throw upon an architect such responsibility. He has many duties to perform, and has no more time to spare than will allow him to see that the building is being carried out according to his plans and specifications. He might be able to give a general supervision to the scaffolds and determine whether they were properly put up, but he would not have the time, nor could he be expected to examine every piece of timber in the scaffolds of a building to determine their strength or if they were free from rot of every description. Workmen as a rule do not like to receive any advice from an architect as to the strength of scaffolds or ladders. Very often they will persist in endangering their lives after they have been warned, with no other apparent reason than to show that they do not desire advice, or do not value their lives. It is very often necessary to insist on men using reasonable caution when engaged in dangerous positions, and when such is the case, their employer or foreman should not be held accountable.

"CANADIAN ARCHITECT AND BUILDER" SERIES OF PRIZE COMPETITIONS.

WE have decided to hold a series of competitions of work which will be of interest to our general readers. While we must make the paper one of especial interest to architects, it is also our desire to have as much matter as possible which will be both useful and interesting to our many other subscribers.

We have not yet decided the subjects for the competitions or their arrangement, but we may mention a few which we have determined to submit to competition, viz:

The plan of a bath room, showing the best position of fixtures, details of finish, with specifications of fixtures.

Suitable details for the interior of a small house—details to include those for staircase, doors, architraves, base, windows, two mantles, etc.

Plan of serving pantry, showing cupboards, shelving, etc., with details of same.

Design for verandah, with details.
" " front fence, with details.
" " front door, with details.
" " three plaster cornices.

Essay on Heating.
" " Plumbing.

We do not propose to give large prizes, but we hope they will be sufficient to induce large numbers to enter the various competitions.

Full particulars of these competitions will appear in the CANADIAN ARCHITECT AND BUILDER for September.

THE CITY OF TORONTO WATER FRONT.

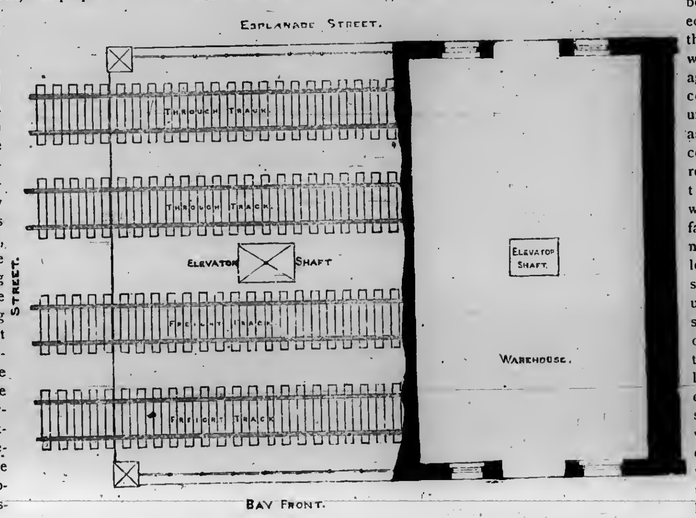
THE importance to a growing town or city of securing railway connections, or to a railway of gaining access to a large distributing centre, cannot be estimated with any closeness in figures. The time was, and that not many years ago, when Toronto had to make great sacrifices to secure railway facilities. No matter what demands a railway corporation made, they had to be conceded, or the service which it might render might be transferred to another point. But Toronto has grown beyond dependence on railways. In fact, the position is reversed. Now it is the railways that must gain access to this city at any cost. But railway-like, they prefer to gain all they can with as small cost to themselves as possible, little caring how much injury may accrue to others. The Grand Trunk came in years ago, when Toronto had to have railway connections, and appropriated the bay front. At that time it may not have been a serious matter that a number of railway tracks cut off the inhabitants from the water. There were not many tracks, there were not many trains, there were not many inhabitants, nor were they in any great hurry, and could without much inconvenience wait while one of the short trains of that day made its way along the esplanade. But now it is different. There are thousands of people crossing these tracks every day to the steamboats which carry them to the many places of resort. This is not a matter of pleasure only to these people; it is also a question of health. That which is of great importance to the healthfulness of a people should receive every consideration, certainly more than the material welfare of a railway corporation. It is a question if the people of Toronto would have opposed the scheme of the C. P. R. to take possession of a very large and important tract of land in front of the most central and valuable part of the city, if they had not gone about it in a most arrogant and domineering manner. The city was informed that the C. P. R. wanted the land and that it would take possession of the city front whether or no. It mattered not that the people did not wish to be served by the railway at so great a cost, and that the land could not be made to serve any useful purposes by the railway. The railway wanted to come to Toronto and do business with its people, and because a Railway Act which makes every provision to allow railway corporations to expropriate everything of value to them, and none to protect the individual in his rights, enables them to take an arrogant position, they proclaim that they do not care whether the people of Toronto want them or not, they are coming, and they will also take all the land they want for railway purposes or otherwise, even though by so doing they cut off the people from the water front. When it is remembered that the bay front from Brock street to Simcoe street is in the possession of the G. T. R., so that no one can make any use of it whatever, some slight appreciation can be gained of the unfathomable depth of the C. P. R. assurance when they coolly propose to extend the barriers to Yonge street. From Yonge street to Brock street is very nearly one mile, and for the entire distance it would not be possible to gain access to the water front except by passing over the property of either the G. T. R. or C. P. R. A people that would quietly submit to such wholesale expropriation, without protest, followed by action, would not be deserving of even the right to have a look at the water of the bay across the railway tracks. These two railways would if they got their own way allow the people but a small and very inefficient outlet to the lake at some point so far east that it would not suit the convenience of any of the citizens except a few who might live directly north of such outlet. We would then see our people going long distances east and west, as the case might be, through the hot and dusty streets to gain the only outlet to the cool and refreshing lake breezes. Such a condition of things must not be. The convenience of the railways is of comparatively little importance, compared with the convenience to, and the health of, the citizens of Toronto.

The railways would not be nearly so anxious to secure the

city front if it was not so valuable in the present, and if they did not consider that present values are but the suggestion of those of the future. The bay front in the possession of railways, and Toronto would be at their mercy. Everyone knows the value of water communication in lowering and keeping down freight rates. Without water communication, what might not freight rates be raised to by companies whose sole purpose is to make all they can without regard to other interests? If this expropriation of the water frontage were allowed, it would only be a question of a year or two when there would be another demand, and more frontage would go to the advantage of some company without the people receiving any benefit. If the C. P. R. can take possession of the water front and close the streets from Yonge to Simcoe, what is to prevent them in the future claiming that they want more space and taking possession of the frontage as far east as Church street, or even Sherbourne street? And if such should take place, what benefit would the lake be to the citizens except to remind them of the stupidity of those who gave up such a valuable property?

We are pleased to know that the great presumption of the C. P. R. has at last stirred the people to action, and that they are not alone satisfied with opposing the C. P. R. in its demand for the water front, but propose to take the aggressive, and determine if it is not possible to remove the railway tracks from the level and place them on a viaduct or high level trestle. The railway companies coolly propose that many of the streets should be closed, and that the few remaining ones should have bridges crossing the tracks. It should be a better plan to make steam, not the citizens of Toronto, do whatever work is required in the form of climbing. The question is, what form should this overhead scheme take, that it may meet every interest with the least disadvantage and at the smallest outlay? Mr. Davies was the first to propose the viaduct scheme many months ago, but at the time it was considered too costly and the suggestion dropped out of view. It has, however, been revived by Mr. Brock, who most earnestly advocates the scheme, with the difference that he proposes that there should be vault accommodation below the tracks. This scheme would remove all the tracks from the level, and consequently all danger to life. The railway tracks being on a level with our streets, causes serious loss of life each year. The law states that trains must not run within the city limits at a greater speed than five miles an hour. That they exceed this limit is admitted, and we are at a loss to know the reason why the city council does not take some means of making the railways observe the law. The railways without hesitation make the city live up to all its agreements with them, even to the smallest item. Then why is the city so very lenient with them? If the railways did not run their trains at a higher rate of speed than five miles an hour within the city limits, it would cause them a delay of at least one and a half hours, which must be a serious loss to a railway company in these days of competition. A viaduct scheme would allow them to run their trains at a high speed without danger to the citizens, and thus save them much time.

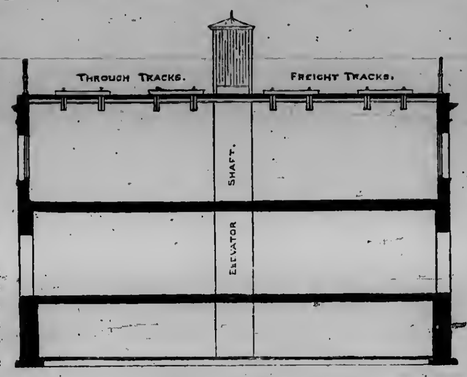
The question now to be considered is, what shall be done with the water front without injury to any interests, not excepting those of the railway? We are in favor of what may be called the viaduct scheme, but would advocate that such arrangement be made as comprehensive as possible. The suggestion that storage vaults could be built between the piers of a viaduct is a good one, but we would go further and propose that a row of warehouses or storehouses be built with a double frontage, above which the railway tracks could be placed, as suggested in the accompanying sketch. These warehouses could be from 60 to 100 feet or more in depth, with a frontage on Esplanade street, and one on a street to the south of same. Such number of tracks could be built above the warehouses as might be required for through trains, and also for the disposal of freight cars. The sketch shows two through tracks and two freight tracks, one for cars being unloaded, the other to be used for shunting purposes. The warehouse would be in width from center to center the length of a freight car, so that a car would stand opposite to the elevators to the warehouses. These elevators could be run from a line of shafting driven by an engine at some convenient point. Such an arrangement would allow of freight being unloaded directly into the storehouse without cartage, where it could remain until such time as it might be convenient to remove it to the business warehouse. In fact, the goods need never leave these storehouses until they are sent to the purchasers, as they could be loaded into cars from these storehouses with equal facility to that with which they were unloaded. Moreover, goods could be received by rail and shipped by water, or *vice versa*, without cartage, the idea being to have a combined street and wharf on the bay side of the warehouses, alongside of which vessels of all kinds could lie and unload. The street or wharf could be made of such width as might be determined upon as most convenient. If these storehouses consisted of two storeys and a basement, the tracks need not be placed at a greater height above the present rails than 32 feet. The streets to the bay would be kept full width and crossed by iron girders. The wharfage front we would have as straight as possible, but running parallel to the storehouses. At the ends of all streets, with a few exceptions, we would build a pier somewhat after the form suggested in sketch; these piers to be carried to the windmill line with a straight face towards the bay. These piers would enclose basins by which vessels could be brought to the wharf in front of the storehouses, where they could discharge their cargoes. Passenger steamers would lie along the outside face of the piers or run into the entrance to the basin and lie alongside of the pier at these points; the entire space enclosed by the cribwork of these piers to be filled in with earth and sodded, with the exception of such space along the outside edge of the cribwork as might be required for the loading or unloading of such vessels as might not require to go



Bay Front.

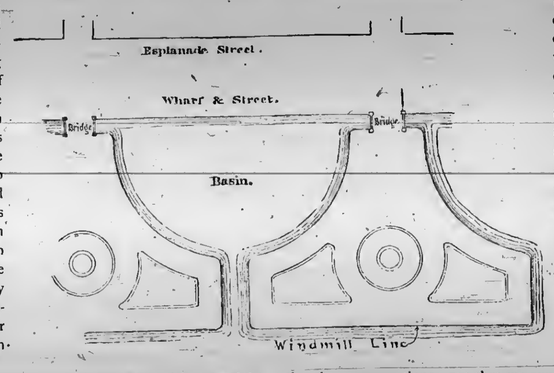
to the wharves. A fountain could be placed in the center, and trees planted over nearly the entire space. These piers are shown with a bridge from the end of street to piers, with the object of having a channel along the wharfage front to allow of the water in the basin being changed by every movement of the water in the bay. The construction of a number of such piers in front of the center of the city, and their gradual extension in time, would make Toronto, with its Island, one of the most beautiful cities on this continent.

It may be urged that to lift the tracks 32 feet above the present level would raise them much too high for station purposes. We have not the levels necessary to determine what should be done, but believe that any difficulty in this direction might be overcome. The height of the tracks could be dropped gradually as the station was approached, if the height should prove too great, and an inclined approach could be made from Front street up to the station level.



Section thro' Warehouses.

We would be in favor of a station after the style of the Broad street station in Philadelphia, with such changes as circumstances might render necessary. Trains enter the above station above the street line, and passengers ascend by a staircase or take the elevator to the platform level. Cabs, etc., drive under the station, so that passengers may obtain a cab, attend to their baggage, and drive to their destination without being exposed to inclement weather. We would prefer to have a station with a number of through tracks, with platforms between them, to be reached by the passengers passing beneath the tracks, thus doing away with the necessity of passing over tracks to enter the right train, as is very often necessary at the Union Station in Toronto. This plan would also prevent people not acquainted with the station taking the wrong train. All platforms to be closed in by gates, etc., according to the English method. The waiting rooms, ticket offices, baggage rooms, etc., to be on the lower level, and arranged with the utmost consideration for the travelling public. The height of such passage need not be more than eight feet, with inclined ways as well as stairs to the level of the platform; all baggage to be received from and handed over to travellers in a central baggage room of ample size, divided into divisions according to the different lines of railway connections, that passengers could easily find their baggage on coming from the landing platform.



We have not the slightest hesitation in stating that one of the most convenient and commodious railway stations could be designed with the railway tracks at a height of 32 feet or more above the level of the Esplanade.

The above scheme may seem to many chimerical, but we believe that the more it is studied the more favourably it will appear. The storehouses should rent readily, and pay a fair interest on the outlay for the viaduct scheme, as there would be a large saving in cartage to many of the occupants, which would allow them to pay higher rents for warehouses placed as those would be than for those without the same facilities for shipping and receiving goods. The party walls between the warehouses would be made heavy enough to carry the iron girders for the tracks overhead, and as the space would only be about 33 feet, the wall need not be excessively heavy, nor would the girders be of a costly size. The roof would require to be inclosed in fireproof material, and covered with asphalt or some similar material. These warehouses would then have the advantage of being fireproof, and consequently would draw high rents, as insurance could be obtained at low rates.

It would be necessary for the railways to have yards at convenient points for ordinary freight. There should be several, so that freight might be delivered at the most convenient point, that cartage as far as possible might be saved. Building material, for instance, is very heavy and bulky, and if it has to be carted from one end of the city to the other, the cost of delivery is very great. If four freight yards were opened common to all railways, the interests of the city would be well served. There should be a yard at or about the foot of Brock street, one east of Sherbourne street, one at North Toronto, and another at Parkdale. All through freight should be handled in railway yards outside of the city limits. If railways were made to pay taxes on the full value of the property they occupy, they would not find it so advisable to hold more ground within the city limits than they absolutely require.

Just as we were drawing the above to a close, the thought came to us that the railways could use blocks of the above storehouses as freight sheds. For instance, the block from Church to Yonge streets could be used as a freight shed, and goods delivered to the different storehouses according to their destination. Goods for Hamilton could be delivered at the Hamilton storehouse, and transferred to the freight car for Hamilton by means of the elevator. Openings could be left in the party walls so that communication could be had with all the sections of the freight shed. The fact that such freight sheds would be fire proof would make them much more valuable to the railways. Each of the railways could have such blocks as they considered most desirable and were willing to pay rent for on the same basis as tenants of the storehouses.

We have thrown out the above suggestions, not that we expect they will be adopted, but with the hope that they may lead to the study of the problem from several points of view. We may have drawn on our imagination to some extent, but if it causes others to think out a solution of the problem, good will result. We do not think that a studied out scheme on the above line would cost more than the city could afford. To a very large extent there would be a direct return for the expenditure, and the balance would not be greater than the city can afford to pay for increased health for the citizens, and the improved appearance of the city front.

QUERIES AND ANSWERS.

(No. 7).—Is lake sand much used for building or other purposes in Toronto? How and where is it obtained? Would a preference be given to it over pit sand at nearly the same price? An answer will much oblige.—M. E. PARK, Cornwall, Ont.

(Reply to No. 7).—Lake sand is not much used in Toronto for the reason that it is next to impossible to obtain it. Contractors are not allowed to take it from the lake shore in proximity to the city. Lake sand is certainly much preferred to pit sand, especially for large and important buildings We are inclined to believe that contractors on such work would be willing to pay 25 cents per load more for it than for pit sand.—THE EDITOR.

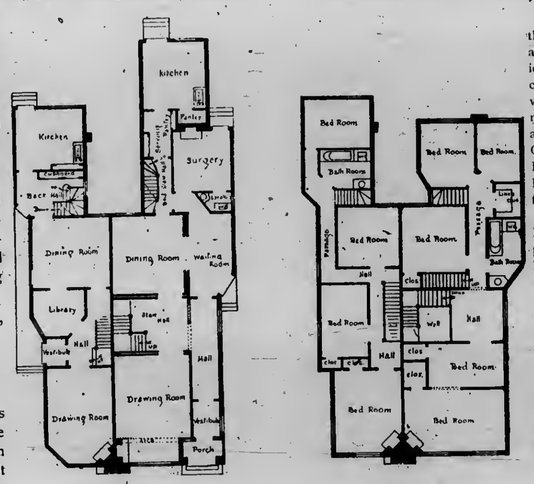
OUR ILLUSTRATIONS.

RESIDENCE FOR MR. C. BECK, PENETANG., ONT.—MESSRS. KENNEDY & HOLLAND, ARCHITECTS. TORONTO AND BARRIE.

Size of building is 68 feet by 75 ft. 6 in., by 53 ft. high. Built of red brick with stone dressings, and tuck-pointed. Roof of entire building is slated. Interior elaborately finished in hardwood. Supplied with all modern improvements and conveniences. The job was let by separate contracts. The contractors were as follows: Contractor for carpenter work, Bryan Bros.; mason work, R. Jocelyn; painting and glazing, A. Bowen; plumbing and heating, H. Evtson, Collingwood. Total cost of building, including grounds, $27,000.

HOUSE FOR DR. NATTRESS, CARLTON STREET, TORONTO.—STRICKLAND & SYMONS, ARCHITECTS, TORONTO.

The plans and elevations are adapted to a frontage of 40 feet, without light on either side. They are built of red brick and Credit Valley stone, and cost about $8,000.



GROUND PLAN

FIRST FLOOR PLAN

PLAN OF HOUSE FOR DR. NATTRESS.

HAMILTON.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

THERE has not been much change in building operations in the Ambition City since my last report, and up to now the building season of 1889 has by no means been a busy or profitable one, compared with former years, either in point of quantity or price There has not been any stagnation in general building, but owing to the number of empty dwelling houses to be found now in every part of the city, there has been very little desire on the part of capitalists to invest in the erection of new ones. However, there have been contracts let for building some very good brick dwelling houses in different parts of the city, mostly in blocks of two, three, and four all two story brick, with stone cellars. Some are in the Queen Anne style, and in all of them is shown a decided improvement in outward appearance at least, over those formerly erected. The old style, plain brick front, without any effort at design or ornament, has been decided in favor of bay window, the porch, and tasty display of ornamental and colored brick work in arches and string courses is having good effect at a small additional cost, with the result that these newly finished houses are quickly rented, thus leaving the old ones to stand vacant.

The system of the new city hall is now completed, with the exception of the main tower. It is a very fair specimen of architecture, real and chaste in design and ornament, and in its prominent situation shows a good effect.

The new Presbyterian Church on the corner of Emerald and King streets has just been commenced.

The plans for the new free library will be submitted for tenders in a few days.

The Young Men's Christian Association building, now in course of erection on James street south, will be, when finished, a plain substantial building, neat in appearance, but in my humble judgment, not approaching by any means in architectural design smaller buildings in other cities; but, in this case, the means justifies the end.

There are two commodious school buildings being erected, one in the east and the other in the west end of the city. Both are brick buildings with stone dressings, but neither has the architectural design and appearance of the Victoria School lately erected on Hunter street in this city, a building that does infinite credit to the architect.

I may remark that there are quite a number of villa residence being erected in the suburbs and adjoining townships, so that our contractors, though not doing the rushing business of former years, have so far kept a considerable number of hands employed, and if the fall trade is good (as some expect it will be) both employer and employee will have little reason to complain at the close of the season.

I am unable to send an official record of the month's building operations, for the reason that no official record worthy of the name is kept. However, our late inspector will now be probably succeeded by an official who will straighten out matters effectually, and then it will be easy to give a true and correct record of building operations in Hamilton.

I am glad to observe that the CANADIAN ARCHITECT AND BUILDER is fast coming into the hands of our building operatives and their apprentices.

WINNIPEG.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

THERE has been a much needed improvement in the building trade generally, and now all classes of mechanics are well employed, but contractors are cutting prices very low. Work has commenced on the Reformatory at Brandon for the Provincial Government and the Home for Incurables, and the Deaf and Dumb Institute will go on in a few days.

Tenders are invited for the Northern Pacific Hotel, which promises to be a very fine building. Mr. Joy, of St. Paul, Minn., is the architect.

Mr. Wheeler is to make extensive alterations to our opera house. He is also preparing plans for additions to some of the public schools.

Messrs. Timewell & Son let the contract to Smith & Gibson, contractors, to erect a solid stone building at Morden, to be used as a bank. They are also building one at Boissevain.

There is to be a stone church built at Deloraine.

Mr. J. M. Ross is building a brick store on Main St., this city, cost $10,000.

The three stores built by Mr. Brydon, contractor, for Mr. Freeman, are completed, also the addition to the Foulds Block.

There are several private residences going up in different parts of the city.

Work on the new city market is progressing very slowly.

QUEBEC.

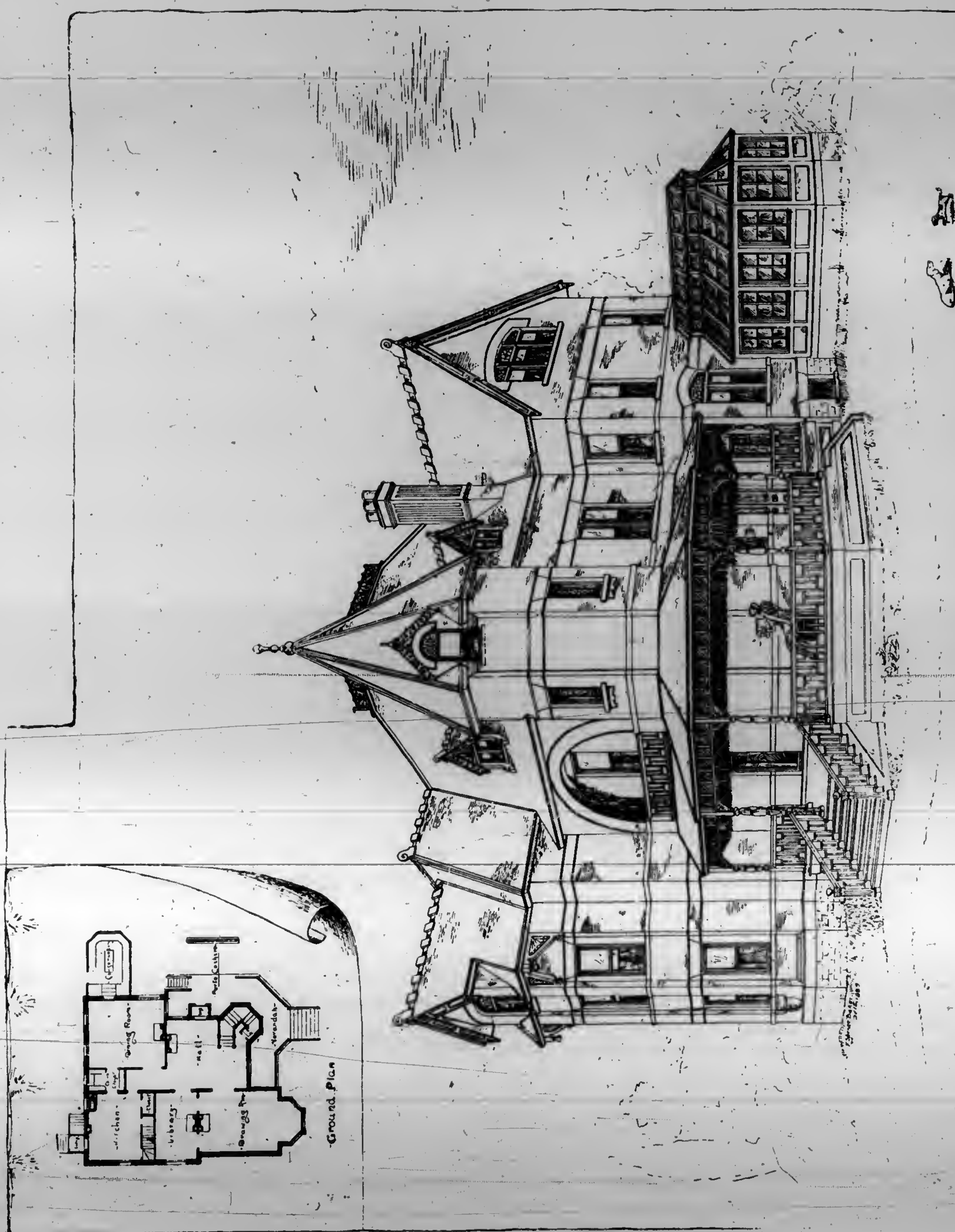
(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

THE JACQUES CARTIER MONUMENT.

ON the 24th June last, St. Jean Baptiste Day, took place the unveiling of the above monument, the ceremony being witnessed by an immense concourse of people estimated to number from 25,000 to 30,000 persons; the following description of the monument and its site is taken from the Quebec *Morning Chronicle*:

The site of the monument is on the north branch of the St. Charles and immediately overlooking the river with the city of Quebec in the background, an excellent view being obtained of its principal points of interest. Nearest is seen St. Rochs, then the suburbs of St. John surmounted by Mount Pleasant, and away to the east, the Parliament House, the Upper Town and the Battery, the Basilica and Laval University. The monument is surrounded at some distance by an iron railing which encloses however a space considerable enough to contain several hundred people.

The monument, which is ereated in the centre of the enclosure above described, is about 24 feet high. It is almost square in form, measuring 8½ feet at the base and 3 feet at the summit which has quite an ornamented cornice. Below the cornice, the granite of which the monument is composed is polished on each of its four sides. On the north face is ound



Residence for C. Beck Esq. PENETANG ONT.
Messrs Kennedy & Holland Archts. Toronto & Barrie.

HOUSE FOR DR. NATTRESS, CARLTON ST., TORONTO.
MESSRS. STRICKLAND & SYMONS, ARCHITECTS, TORONTO.

Jacques Cartier's shield with the device: *Semper fidelis*, and immediately below, the following inscription:—

JACQUES CARTIER
ET SES HARDIS COMPAGNONS
LES MARINS
DE LA GRANDE HERMINE
LE PETITE HERMINE
ET DE L'EMERILLON
PASSERENT ICI L'HIVER
DE 1535-36

Below this is the crest of Lord Stanley of Preston, Governor-General of Canada, and device: "*Sans changer.*"

On the east side is this inscription:—

LE 23 SEPTEMBRE 1625
LES PERES
JEAN DE BREBŒUF, ENNEMOND
MASSE, ET CHARLES LALLEMANT
PRIRENT SOLENNELLEMENT POSSESSION
DU TERRAIN APPELE FORT JACQUES-
CARTIER, SITUE AU CONFLUENT
DES RIVIERES ST-CHARLES ET
LAIRET POUR Y ERI-
GER LA PREMIERE
RESIDENSE
DES MISSIONNAIRES JESUITES
A QUEBEC

Below is found the crest of Lieutenant-Governor Angers with the device: *Par droicts chemins.*

The south side is surrounded with the arms of the *Cercle Catholique de Quebec*, representing the Sacred Heart, with the device: *In manifestatione veritatis* and this inscription:—

LE 3 MAI, 1536
JACQUES CARTIER
FIT PLANTER A L'ENDROIT OU IL VENAIT
DE PASSER L'HIVER UN CROIX DE
35 PIEDS DE HAUTEUR PORTANT
L'EOUSSON FLEURDELYSE ET
L'INSCRIPTION
FRANCISCUS PRIMUS DEI GRACIA REX
REGNAT

Below the inscription is the crest of Cardinal Taschereau and the device: *In fide, spe et charitate certandum.*

On the west side is engraved a palm with the names of the Jesuit martyrs Jogues, Garnier, Masse and De None at the right and Brebeuf, Lallemant, Buteau and Daniel on the left. Below is the shield of the Jesuit Order and the device *Ad majorem Dei gloriam.*

The monument was designed by Mr. E. E. Tache and executed by Mr. J. A. Belanger. The granite of which it is composed comes from the quarries of Migwick, on the line of the Quebec & Lake St. John Railway.

MONTREAL.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

"A PROPHET HATH HONOR SAVE IN HIS OWN COUNTRY."

CANADIAN architects, if you want to be employed on Canadian works go at once, rent an office in Albany, Syracuse, Boston, New York, or some small American town—but it must be American, otherwise you will never be appreciated by the Canadian public. In Montreal to-day it does not matter what your antecedents may have been. Hang up your shingle as an architect from Boston and New York; run down every other local architect; never mind your own social standing; keep up lots of style; take all the credit trades will give you, and when any important work is to be given, our public will ask no questions, and will put aside well-known and reliable men to make room for you. For all this we have but ourselves to blame. There is no *esprit de corps* among our Montreal architects, but on the contrary, a feeling of jealousy prevails. It is a great pity we have not some such society as the R. I. B. A., of England, to raise the standard of our profession.

"Honor and shame from no condition rise,
Act well you part, therein the honor lies."

Y. M. C. A. BUILDING.

There is no little excitement among the building trade of this city regarding the awarding of the contracts for the above building. The building committee of the Y. M. C. A., following the example of other corporate bodies of Montreal and Toronto, employed an American architect to prepare plans, specifications, etc., for the proposed new building on Dominion square. Our builders naturally jeered the local architects at the "Committee having to go outside of the Dominion to get a very ordinary building designed." We could only "grin and bear it." To-day, however, the tables are turned and there is a great howl. A syndicate from Syracuse, U. S., have tendered for the construction of the work and underbid the Montreal contractors I hear some $30,000 on the original plans, and some $10,000 on revised plans, and were consequently awarded the contract. So the architects have the laugh this time, and wonder how it is the Committe have to "go outside the Dominion to get a very ordinary building erected."

I cannot understand how it is an American syndicate can come into a Canadian city and underbid the local contractors, unless it is accounted for by the fact that our builders, not knowing the architects and their style of work, interpret their specifications differently from the American syndicate who are perhaps acquainted with the architect's style. We shall watch the progress of the contractors with interest, and perhaps may yet learn how to build cheaply.

It is rumored that Mr. Warden King, Chairman of the Building Committee, who is also proprietor of a large foundry here, has resigned his position as chairman, and issued a circular to that effect to the local builders. This I understand was done previous to the opening of the tenders, but as the Yankees say, "I guess he smelt a mice" and wanted to keep in with the building trade, but even that does not soothe their angry passions, and they are unanimous in saying that when the collectors come round they will be told to go to Syracuse and collect the necessary funds to erect their building.

DUTY ON PLANS.

Have Canadian architects no protection? We live under a protective Government—our bread, clothes, the material we use to gain our living, are all taxed to help to make the revenue of "this Canada of ours"? Our local corporations levy business taxes on us to keep up the city, and yet plans and specifications can be imported from the States free of duty under the very eyes of our otherwise watchful Custom House officers. It would be interesting to know whether they are classed as works of art, artful works, or simply smuggled across the line.

CITY HALL NOTES.

Mr. P. W. St. George, City Surveyor, has just returned from a two month's leave of absence. I hear he has visited all the chief cities on the other side and studied the question of pavements, roads, sewers, etc. It is earnestly hoped that he has obtained a few good pointers on the construction of roads especially, for Montreal to-day possesses worse roads than any other city I have ever seen. This is in a measure accounted for by the fact that no sooner is a street put in good order by the Road Department than the Water Department or Gas Company come along and cut it up again. Then again it strikes me as ridiculous to see a road made by spreading a few inches of macadam over the surface, burying it in fine sand, which the first heavy shower of rain washes away and conducts to the nearest gulley, from which it has to be removed and carted to the dump. Surely there is some better treatment for roads than this. That it is possible to make good roads in this country, I would refer the Department to the roads of the Turnpike Trust.

I do not wish it to be inferred that I am finding fault with our City Surveyor, because if the money was not forthcoming and he himself not armed with the necessary authority, we must hold him blameless in the premises.

The Council have at last appointed an assistant to Mr. McConnell, Superintendent of the Montreal Water Works. The fortunate candidate is a Mr. Laforest, of Joliette. It is to be hoped that he will prove an efficient assistant to the worthy chief, and will doubtless be given ample opportunity to show a good record.

BUILDING NOTES.

The building trade is considered brisk, an improvement if anything on last month. Contracts have been let for the following buildings:

A large Catholic Church, on St. Antoine St.; a house on Dorchester St., for R. Forsyth; a block of tenements on Bishop St., for Mr. Roman: two houses on Dorchester St., for Geo. Roberts, builder; a block of tenements on Versailles, for Wm. Moore; an addition to the Merchants' Cotton Factory; a house on Sherbrooke St., for Mr. Allan, and some stores on St. Catherine St. for W. Weir.

HOW TO ESTIMATE.

By "CATO."

IN connection with excavations, the following data will be found serviceable as it gives the approximate quantity of the work. A good laborer ought to do in a day of ten hours hacking ground with a pick, light earth 16 cubic yards; clay, 10 cubic yards; gravelly soil, 7 cubic yards; chalk, 20 cubic yards. Filling barrows, average soil, 20 cubic yards per day. Wheeling, 25 cubic yards; depositing and returning, 35 cubic yards.

A load equals 1 cubic yard of 27 cubic feet. An ordinary contractor's cart, 6 feet long × 3½ feet wide, 22 feet deep, will hold 45 cubic feet, or 2½ tons of clay.

A contractor's wheel barrow will hold one tenth of a cubic yard, or about 2¾ cubic feet.

1 ton of pit sand will equal 29 cubic feet; 1 ton of pit coarse gravel, 19 cubic feet; 1 ton clean shingle, 23 cubic feet; 1 ton stiff clay, 10 cubic feet, and 1 ton mould or earth, 32 cubic feet.

If it be desired therefore to figure up how long it will take to pick out any of the above mentioned kinds of ground, all that is necessary after finding the numbe of cubic feet in the whole excavation, is taking for instancer the number contained in that stated in the June issue, say 5,400 cubic feet. For filling into barrows, working to the table

20×27=540

540)5400(10 days.
540
00

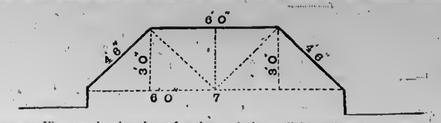
Wheeling 25 yards depositing and returning,
25×27=675)5400(8
5400

The above process can be worked out for loading carts allowing one laborer to fill about 35 cubic yards per day.

Trenches for footings, etc., are measured by their superficial dimensions multiplied by the depth and price per cubic yard as before.

For pier and post holes allow double measurement, that is, if a pier hole figure up 96 cubic feet, allow 192 feet, or 7⅛ cubic yards at price per yard as before.

In finding the solid contents of an angular excavation, as for bay windows, etc., the surest method is to take a square outside dimension of the whole, or if it be possible, to form rectangles of the plan, after the manner seen in the sketch, and to multiply by the depth for solid contents. Allow at least 25 per cent above actual cost, as more labor is required in hacking and digging angles, and this percentage will cover it. They come under the arithmetical heading of the triangle, and if it be required to find the exact contents of an angular bay, or in other words, the number of cubic feet of earth which must be taken out to allow its entry, the following method can be gone through :. Divide the figure into triangles, and find the area of each separately, by multiplying the base by half the altitude. Thus, sup-



posing Fig. 2 to be the plan of a bay window, divide it into three triangles as shown, and taking one side of each as the base, bisect it, and join the point of bisection with the opposite angle. Measure the joining line, and then multiply the whole length of the base by half the length of the joining line, and the result will be the area, thus :—A bay window 12 feet long, 6 feet across the front, and 3 feet deep. Then 6 ft. × 1 ft. 6 in. = 9 square feet × 3 = 18 square feet × by the depth, 9 feet = 162 cubic feet. Add the sums of the three areas together and multiply with the depth of the excavation, as in a square excavation, and the result will be the contents in cubic feet, which divided by 27, will give the number of yards desired.

BUILDING OPERATIONS IN TORONTO.

FROM the records in the City Commissioner's office, we have prepared the following statement showing the number of building permits granted for the first six months of the present year, compared with the number granted for a similar period in 1888. The statement is prepared with a view to showing the class and value of the buildings which are being erected. It is interesting to note that, exclusive of the new Board of Trade building, to cost $300,000, and for which no permit appears to have been obtained, the value of new buildings for which permits have been granted this year, exceeds those of last year by upwards of $100,000. The amount spent on residences this year is $200,000 in excess of 1888, and there is a large reduction in number of cheap, rough-cast houses. Below are the figures :

1889.

Class of Buildings.	No.	Total Cost.	Alterations and Additions amounting to
Outhouses, stables, etc.	19	6,185	300
Warehouses	6	61,200	3,200
Churches	1	15,000	
Factories and Workshops	14	13,100	13,800
Hotels	1	8,000	16,000
Hospitals	1	75,000	
Public Schools	3	50,653	18,000
Brick Dwellings	197	613,700	63,300
R. C. Dwellings	32	29,550	1,500
Stores	61	226,600	40,200
Public Halls	2	19,000	1,750
Boat House	1	1,200	
Offices			7,050
		$1,120,188	$164,100
			1,120,188
			$1,284,288

1888.

Class of Buildings.	No.	Total Cost.	Alterations and Additions amounting to
Outhouses, Stables, etc.	16	4,185	
Warehouses	3	75,450	2,500
Churches	6	200,500	16,000
Factories and Workshops	6	11,500	5,500
Hotels	1	12,000	7,000
Livery Stables	2	16,000	
Grain Elevators	1	25,000	
Skating Rinks	2	38,000	
Hospitals	1	21,000	
Public Schools	1	20,000	
Brick Dwellings	128	416,900	27,300
R. C. Dwellings	48	51,450	2,900
Stores	67	223,000	5,200
		$1,114,985	$66,400
			1,114,985
			$1,181,385

DECORATION AND FURNITURE

SCULPTURE IN CANADA.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—As one who has a genuine desire to advance all branches of art in Canada, I ask your permission to occupy a short space in your columns for the purpose of making public a few thoughts which have suggested themselves to me on the subject of a recent sculpture. Criticism is at all times apt to appear ungracious, but those to whom the onward progress of art is dear, can understand the motives which prompt this letter.

A few weeks ago there was unveiled in Toronto a bronze statue of Dr. E. Ryerson, who was so widely known to fame, and whose memory is probably destined to survive many of those whose deeds were more showy but less useful.

A man of plain, determined, weighty and beneficent career, and who possessed such individuality, should be a subject which a true sculptor would have no difficulty in grasping and transferring to the clay.

With your permission, I will point out what may be considered serious defects in the execution of the statue.

The pose is effective and natural, the garb becoming, the accessories suitable, but going into details, noticing a rather large amount of conventionality of treatment, one can but notice the sad lack of artistic feeling. Surely the talented Doctor did not possess so huge a head, so out of proportion to the frame. Massive and square it certainly was, the hair abundant and the aspect benevolent but determined, yet the writer's personal recollection is that most decidedly Dr. Ryerson possessed a well balanced and finely proportioned figure, the head by no means predominating as in this bronze.

The hands are simply terrible, one of the ill-assorted pair not only larger than the other, but the extended right hand, reversing nature and the traditions of art, shows that the index finger was at least a half diameter thicker than the others. Is this designed "*au naturel*" or shall we look upon it as a conventionalized representation of the mighty finger which guided the pen ? If the latter, the fashion of naming the object considered necessary in the dawn of art had better be made use of, so that there shall be no danger of future Canadians exhuming this work and imagining that their ancestors were so singularly formed.

While on this subject of proportions, I cannot disabuse my mind of the idea that the feet, limbs, trunk and head belonged to a diversity of people, for most assuredly the feet don't fit the legs, the legs the body, nor the body the head. Throwing around such a trunk the flowing robe of a D.D. does not conceal this disproportion, and in no particular way helps the picturesqueness, whilst the tame modelling of the drapery is made more conspicuous.

Nothing in the way of accessories is so hard to arrange naturally and gracefully as drapery, either in painting or sculpture, and yet, with what pleasure can the eye dwell on the efforts of the early fathers of art—the revivalists to whom we owe so much ! In early examples, failure in drapery is most rare—in latter days, the rule, perhaps because we are so particular about each particular hair that the garb must be left in slovenly modelling. The example under notice appears not only thin and harsh and hard, but a graceful fold or line can with difficulty be picked out. Compare, for instance, the graceful lines imparted to that ungraceful garment, a frock coat, as set out in the George Brown statue in Queen's Park—every wrinkle, fold and crease is intelligible and natural.

A very serious error, and one which the most ignorant modeller should have avoided, is that of making the pedestal on which rest the books, overhang the circular base to such an extent as to give an impression that one touch would upset the lot.

As such laudatory notices appeared in the local press, I was anxious to get a calm study of the subject, hoping that the attention not only of artists, but also of the public, might be engaged to forward the cause of art by intelligent criticism, and

that mistakes once pointed out might be avoided in future works.

It will not do to settle down in calm complacency and cry "well done," whilst better remains before, and if the next statue erected in the country be not a nearer approach to a great work than the subject of the present letter, and rise above tame mediocrity, the artistic community will be sincerely to blame if by keeping silence where speech would be golden, they permit the public to rest content and plume themselves on the advances culture and art have made in our Canadian home.

Respectfully yours,

ONWARD AND UPWARD.

MEMORIAL WINDOW.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—A two-line notice in a local paper recently announced that a memorial window was inserted to the memory of Charles Jones, Esq., in the Cathedral at Hamilton. This appears, on inspection of the window in question, rather scant recognition of a work important and meritorious as a specimen of Canadian art-decoration. The window, although of one opening only, attains the height of over 17 feet from the sill, and over 3 feet in width. Within this space are illustrated two Scripture subjects—the larger and most considerable showing "Nicodemus Coming to Christ by Night." The smaller, in the base, is "The Charge to Peter." In the former somewhat uncommon theme, a like uncommon effect is produced by partial representation of lamplight from one pendant lamp and another on a brazier. Although treated in a somewhat conventional manner, the balance of tone and rich harmony of color, enhances the interest of the leading *motif*—the placid majesty of the Great Teacher and the rapt attention of the timorous, but enthusiastic disciple. The base subject is less a departure from traditional treatment, and though possessing good points, is less successful than the larger. The ornament is elaborate and appropriate. The window is from the studio of McCausland & Son, Toronto.

HAMILTONIAN.

"ART EDUCATION IN ONTARIO."

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—Your last issue contained a letter on the above subject, in the course of which the writer, after delivering some unvarnished criticisms on the men of light and leading, is kind enough to break the current of his strictures by a word of commendation and encouragement to the "Toronto Art Students' League." As representing that society, permit me to say, we are grateful for any recognition in our arduous uphill fight, especially from one so conversant with the whole subject, and whose opinion, endorsed by the silent authority of the CANADIAN ARCHITECT AND BUILDER, should have due weight with all interested in art matters. It is too true, as "Anti-Humbug" pertinently points out, that the money voted for the encouragement of art is at present worse than wasted. Whilst those who make a pretense, get well paid, others doing the *real work*, very politely and courteously, but none the less unmistakeably, refused a cent of the grant for that purpose, on the ground that all moneys voted for art purposes are required for some years yet to form the nucleus of a building fund. But while at the present rate of progress this may be a good prospect for the next generation, it is well to remember the old proverb which says that "while the grass grows, the horse starves." Thus while the life-class in Ottawa and Montreal get $300 a year each (I don't know what other support is awarded elsewhere) we are to starve on the husks of prodigal promises for the future.

I suppose having tramped it thus far without a lift from "carriage folk" (to use an *un*hackneyed expression) we can foot it the rest of the way up the "hill difficulty," but like "poor Joe," it's "werry 'ard to keep movin' on" without plenty of "chivying" from policeman "Debt." Of course we could greatly augment our numbers and friends if we prostituted the purposes of art study to flirt with amateurism, and opened our ranks to all forms of dainty *dilletante* triflers. But being, like Mark Twain's pilgrims, "just a handful" of earnest workers, we have the temerity to consider that some responsibilitydevolves on us to keep ourselves pure and unspotted in that respect, and for the sake of the art reputation of the Queen City, and the prospect of equipping some of the art students of the rising generation, to save a corner of solid ground for the coming men to build up this fair city's art future upon.

Just over a score of us, and ne'er a millionaire among us, the expenses of carrying on the class weigh heavily on our devoted shoulders, but we must not be misunderstood to be asking charity when we demand our just rights of recognition and aid ; much less would I desire the impression to be left that we wish to disparage the efforts of other bodies of artists, but simply to protest against the position of being, although acknowledged to be efficient and praiseworthy, the only section left out in the cold, while some others, according to "Anti-Humbug," owe their inertia to too much "coddling."

Thanking your correspondent and yourself on behalf of the Art Student's League, I am,

Yours faithfully,

SAM'L M. JONES,
Corresponding Secretary.

PLUMBERS AND THE ADVANCE OF SANITARY SCIENCE.

L. D. HOSFORD, of New York, in a short address urging the importance of registration of plumbers, based on competent examination, said :

Another question which has suggested itself to my mind while sitting in this room is, What are we doing in the line of progress in sanitary science ? Are we not to a certain extent a mutal admiration society ? What developments are being made in the prosecution of our buisness ? We are continually growling about interference from a class of people known as sanitary engineers and scientific men.

It must be acknowledged that they find business to do and work to condemn—we must have in the past done poor work, otherwise there would be no such men condemning our work and no such work to condemn, consequently we are directly responsible for this class of men. Is the proper attention paid to the development of scientific problems appertaining directly to our buisness ?

I have been a member of the New York Association of Master Plumbers for about two years, in which we have a committee called the Sanitary Committee, which to my knowledge has never been heard from with but one exception in that time. Is that right ?

Ought we not to employ scientific men to lecture in our local organizations ? Are we too proud or bigoted to accept their instruction ? We advocate this class of instruction in our trade schools to-day and some of the scholars are better versed in technical knowledge than some of the master mechanics. I confess my ignorance on a thousand subjects appertaining directly to my business, and I find on conversing that my colleagues are equally ignorant. Ought we not to give more attention to this particular point ?

I am aware that the National Association can do little in this matter except through the councils of the local Association. I consider that the ventilation of the dwelling house belongs as much to the plumbing business as the ventilation of the drainage system. Should we not have a blackboard, a coarse of lectures on plumbing in every council of local associations ?

In one of the reports read on this floor yesterday the statement was made therein that a certain department had forced the plumbers to good work. Is not this rough on the plumber ? Ought he not to lead rather than be driven in such matters ? It is true that upon the recommendation of our Association Health Board rules and laws are sometimes founded ? Is not this the proper way at all times ?

We have received from the author, Mr. J. A. L. Waddell, consulting engineer, Kansas City, Mo., a copy of a timely treatise, in pamphlet form, entitled, "Iron Viaducts for Highways." The writer in this little work gives many useful hints regarding faulty design and construction of viaducts, with instructions as to the proper manner of letting contracts for these structures so as to secure efficiency and economy.

SANITATION AND HEALTH

TORONTO PLUMBERS' PICNIC.

THE day selected by the Master Plumbers of Toronto upon which to enjoy their second annual picnic, proved to be very unpropitious, a heavy rain-storm setting in early in the forenoon and continuing throughout a considerable portion of the day.

In the afternoon a baseball match was played between East and West end plumbers, the teams being composed as follows: East End—Messrs. Wright, Forrester, Whitelaw, Hogarth, Jordan, Kinghorn, Bevis, Fullerton and Ritchie; Whitelaw, captain. West End—Messrs. Erwood, Rogers, Muirhead, Torbet, Gibson, Carlyle, Higgins and Knox; J. Sims, captain. The score was 17 to 29, in favor of the East.

Following the baseball contest, came other athletic events, which were decided as follows: men's 100-yard race, age, 20 to 40 years, won by Mr. Wm. Ritchie; Men's 100-yard race, age, 40 to 100 years, won by Mr. Joseph Wright; three-legged race, won by Messrs. Ritchie and Carlyle; ladies' race, won by Mrs. Stark. A great deal of interest and not a little amusement centered in the tug-of-war. The *personnel* of the teams representing East and West, was as follows: East—Messrs. Fiddes, anchor; Ewing, W. Ritchie, Whitelaw, Wright, Hogarth, Bevis, Kinghorn, Jordan, Carlyle, W. J. Forrester, captain. West—Messrs. Sims, Hynes, Gibson, Rogers, Torbet, Burroughes, Higgins, Muirhead, Knox and McMillan; Mr. Kennedy, captain. The East end team scored a victory after a hard fought struggle. W. J. Burroughes presented the prizes to the successful competitors.

Ample provision was made for satisfying the abnormal appetites created by these contests and the healthful lake breezes. Credit is due the Committee of Management, Messrs. W. J. Burroughes, N. Whitelaw, H. Hogarth, Thos. Cook and Fred Armstrong, for the success which attended the day's proceedings in spite of adverse circumstances.

SEWAGE DISPOSAL AT THE ASYLUM FOR THE INSANE, LONDON, ONTARIO.

THE question of the disposal of the sewerage of the London Asylum for the Insane has occupied the attention of the authorities for many years past. Up to the present time all the sewage from the institution has been delivered into a small brook leading into the south branch of the Thames River, which flows through the city of London. This brook is not over ten feet wide and is ordinarily very shallow, running nearly dry at times; and, considering that the asylum shelters over a thousand persons, the necessity for some other means of disposal is apparent.

A number of engineers have been asked on different occasions to give their ideas as to the remedy for the evil, but no definite action was taken in the matter until early in 1888, when the Ontario Government decided to employ Col. George E. Waring, Jr., of Newport, R. I., to examine into the whole question and to make a report with such plans and information as would be necessary for carrying out the work advised. Col. Waring found it out of the question to do anything with the sewage except by some method of purification, and advised that it be applied to the land in much the same manner as is done at the State Hospital for the Insane at Norristown, Pa., where the work, done under his direction, has been such a decided success.

The plan as recommended and finally carried out is as follows:

The old system of sewers is used for the removal of storm water, and a new system of small, vitrified sewer-pipes has been laid, connecting with all fixtures and flushed by automatic flush-tanks, and delivering all small wastes into an underground brick tank near the main asylum building. This tank has a capacity of 100,000 gallons to the spring of the three arches with which it is covered. The present daily water consumption of the asylum is about 60,000 gallons. The sewage enters a small chamber at one end of the tank and passes through a vertical screen into the tank proper. Perfect ventilation is secured by means of six man-holes, three at one end having perforated covers, and three at the other end being connected by 10-inch pipes, underground, with the chimney of the pump house.

The situation of the asylum building rendered disposal by gravity impossible, and thirty feet east of the tank a pump house has been built, containing an 8-inch Webber centrifugal pump attached to the shaft of a 25 h. p. Westinghouse automatic engine. The suction to the pump is 10-inch iron pipe, with a bend at the end dipping into a small sump in the bottom of the tank at the lower end so that the sewage may be entirely pumped out. About one hour's pumping per day will be required. The discharge-pipe from the pump is 8-inch spiral-riveted pipe, 1,526 feet long, entering at the bottom of a brick distributing well, four feet in diameter in the disposal field.

Four feet above the bottom of this well leads out a line of 18-inch vitrified earthenware channel pipe, running at the end of a track of land 610x334 feet, which has been thoroughly undermined, and graded to a perfect level, with parallel alternate ditches and beds running longitudinally through it. The ditches, eighteen in number, are 8 feet wide at top, 2 feet wide at bottom, and 1½ feet deep. The beds between are 10 feet wide at top. The channel pipe from the distributing well has an opening into each ditch, with a gate to regulate or shut off the supply. The sewage is run into six of the ditches on one day, six others on the next, and the remaining six on the third day, when the first six will be again brought into requisition.

The discharge-pipe from the pump has a continuous rise, being highest at the distributing well, so that when pumping is stopped all sewage in the well and in the pipe will run back through the pump into the tank and cannot freeze in winter.

Beyond the level track is a gently sloping field of about twelve acres, with three shallow ditches across it following the general contours of the ground, and from two to three hundred feet apart. These are distributing ditches for broad surface irrigation, and have a carrier ditch running from the end of the channel pipe at the head of the level track connecting them. It is intended to dispose of the sewage on the level track generally by intermittent downward filtration, and to use the irrigation ditches for relief if necessary, or for agricultural purposes.

Friday, July 5, a formal inspection of the work was made by Kivas Tully, Esq., Architect-in-Chief of the Province of Ontario; Dr. O'Reilly, Inspector of Asylums and Prisons; the Hon. Mr. Drury, Minister of Agriculture; Col. George E. Waring, Jr.; the Provincial Board of Health, Mayor and City Council of London, London Boards of Health and Trade and Hospital Commissioners, and others, to the number of eighty. Col. Waring gave an explanation of the details of the work as they were examined. Forty thousand gallons of sewage were pumped on to the land in the presence of the visitors, and the practical and successful working of the whole system shown. The sewage was almost odorless, and, having been thoroughly beaten in its passage through the pump, nothing but very small fragments of solid matter was visible. The soil of the field is mostly a light gravel, and absorption, therefore, is very rapid, as was shown by the entire disappearance of the 40,000 gallons of liquid in less than one hour.

The work has been done by the Department of Public Works of Ontario, under the general direction of Kivas Tully, Esq., Architect-in-Chief, and under the inspection of C. G. Horetzky. The entire execution of the work has been directly controlled by F. W. Farquhar of the firm of Waring, Chapman & Farquhar, civil engineers, New Port, R. I.

Construction was begun in October, 1888, and suspended in December on account of cold weather; then resumed in April, and received the first working test June 26, 1889.

The items of construction are as follows: 1 sewage collecting tank, 1 pump house, containing boiler, pump, and engine; 1,526 feet spiral riveted force-main, 3,865 feet 6-inch sewers, 640 feet 4-inch sewers, 2 automatic flush-tanks, 1 distributing well, 320 feet 18-inch channel pipe, 2,700 feet 3-inch tile underdrains, 2,700 feet 4-inch tile underdrains, 1,250 feet 6-inch tile underdrains, 3,000 cubic yards of grading, 10,800 feet settling ditches, and 2,700 feet irrigating ditches.

It is impossible yet to give the exact cost, which is in the neighborhood of $15,000.

CONTRACTS

CONTRACTS AWARDED.

MIDLAND, ONT.—Mr. Robt. Reed, of Owen Sound, has secured the contract for the harbor works at this place.

LUCAN, ONT.—Messrs. Vanwick & Co., Parkhill, have secured the contract for the High School, their tender being $6,000.

VICTORIA, B. C.—The Provincial Government have awarded the contract for the addition to the asylum, to Mr. Hugh F. Keefer.

VANCOUVER, B. C.—Messrs. Turnbull & Co., have been awarded the contract for the new Provincial Court House to be erected here.

GODERICH, ONT.—The contract for additions and improvements to the Huron County Buildings has been awarded to Edward Sharman.

PORTAGE LA PRAIRIE, MAN.—Mr. T. Kelly, of Winnipeg, has been awarded the contract for erecting the Home for Incurables, at the price of $14,000.

ORILLIA, ONT.—Messrs Boyes & Mathews have received the contract for the new church for the parish of St. James. The new building will cost $16,000.

STRATHROY, ONT.—Messrs. Lewis & Cluff, of Ottawa, have been awarded the contract for the new post office building, at the contract price of $15,000.

WINNIPEG, MAN.—The contract for the new North Presbyterian Church has been awarded to Messrs. Bears & Read, at $3,000. Mr. J. W. Grieve was the architect.

TORONTO, ONT.—The contract for driving piles and laying 200 feet of 30-inch pipe at the foot of Bay street has been awarded to Medler & Arnot at $13.50 per lineal foot. The St. Lawrence foundry has been awarded the contract for supplying the pipe at $39.50 per ton.

CONTRACTS OPEN.

NEWMARKET, ONT.—H. L. Cane, chairman Fire and Water Committee of the town Council, will receive tenders up to the 19th inst., for piping lead, valves, hydrants, and specials required for the extension of the water works system, tenders for the laying of the same, including excavating for the piping, etc., laid complete. Tenders to state the price per foot for the piping and the price each for hydrants.

WINGHAM, ONT.—The by-law appropriating $8,000 for a town hall has been carried.

NEW GLASGOW, N. S.—About $50,000 worth of new buildings will be erected this summer.

HARLOCK, ONT.—The members of the Burns' Church will build a new church on the old site.

MEDICINE HAT, N. W. T.—Only $1,000 more is required to cover the cost of the proposed new hospital.

HAMILTON, ONT.—The congregation of All Saints Church have decided to erect a chapel in the West end.

PETERBORO' ONT.—A by-law has carried appropriating $25,000 for the erection of a new market building.

LUCKNOW, ONT.—The ratepayers have assented to a by-law appropriating $10,000 for a system of waterworks.

CHATHAM, ONT.—T. J. Rutley, architect, is advertising for tenders for the erection of a brick block on King St.

LACHINE, QUE.—An effort is being made to find a means of draining the town and establishing a system of sewers.

NEW WESTMINSTER, B. C.—Clowe & Maclure, architects, have prepared plans for a new public hospital costing $10,000.

SARNIA, ONT.—Plans are being prepared for the erection of a four story brick hotel on the site of the Alexander House, to cost $30,000.

VICTORIA, B. C.—The by-law to enable the city to raise $175,000 for the purpose of extending the waterworks, improving Beacon Hill Park and fire apparatus, has carried.

ORILLIA, ONT.—It is said that the admirers of a more advanced ritual have decided to separate from the Church of England here, and have selected a site for a new church.

GALT, ONT.—Plans prepared by Mr. Robt. Mellish for the new hospital, have been accepted, and tenders will be asked as soon as they are altered somewhat, with a view of reducing the cost.

BRANTFORD, ONT.—The plans of Mr. Alex. White, of Woodstock, for the new drill shed, here, have been approved by the Government, and tenders will shortly be called for the erection of the building.

SMITH'S FALLS, ONT.—Plans are being prepared by Mr. Martin, architect, for the reconstruction of the McLaren hotel, recently destroyed by fire. —The R. C. Church will be improved at a cost of $8,000.

WINNIPEG, MAN.—The Baptists of Manitoba intend erecting a college shortly. —Christ Church, recently built at a cost of $15,000, having got in a dilapidated condition, a new and costly edifice will be erected.

CAMPBELLFORD, ONT.—Mr. John Galt, C.E., is preparing plans and specifications for a system of waterworks, and tenders for construction will be asked in a few days. —An appropriation has been made for electric lights.

MONTREAL, QUE.—The plans for the proposed new Y. M. C. A. building have been revised, and new tenders will shortly be called for.—The widening of St. Lawrence Street and expropriation of the old buildings on the west side will result in the erection of seventeen new blocks between Craig and Dorchester streets.

WINDSOR, ONT.—Mr. Jas. McKellar of this town, will give $1,000 and a valuable building site for the purpose of erecting a Congregational Church.—The Board of Education advertise for tenders for the building of an addition to the Third Ward School, the Catholic school, and a new four room school in the First Ward.

NIAGARA FALLS, ONT.—The water commissioners ask tenders, accompanied by plans and descriptions, for furnishing and erecting two sets pumping machinery, together with turbines, iron flumes, penstocks, etc., complete. Each set of machinery to have a pumping capacity of one and one-quarter to one and one-half million gallons per 24 hours. Particulars may be obtained from town clerk.

KINGSTON, ONT.—$1,000 is to be expended in improving St. Paul's Church.—$2,100 has been appropriated by the Council for an addition to the Louise St. school.—It is probable that an additional scheme will be submitted for the purpose of increasing the area of the water mains.—The Oddfellows intend to erect a large building on the corner of Princess and Sydenham streets, costing $20,000.

TORONTO, ONT.—A. R. Denison, architect, has been instructed to prepare plans for a new fire hall for St. Alban's ward.—The St. George's Society have purchased a site on Elm St., whereon they propose to erect a building suitable for their work.—The sum of $15,000 has been subscribed to a fund for the erection of a new Y. M. C. A. building in the west end.—Plans have been prepared for alterations to the city Registry office, to cost $7,000.—Tenders will be asked for alterations to St. Andrew's market buildings, to cost $15,000.—Plans have been approved for increasing the height of the tower of College St. fire hall, at an estimate cost of $2,000.

Ten miles of new sewers have been constructed by the Works Department of the city of Toronto during the present year.

Mr. Stephen Saunders, who for many years occupied a prominent position as a builder in the city of London, Ont., died at his residence, 527 Dundas street, a fortnight ago. He was a native of Devonshire, England, and had resided in London, Ont., since 1848, and was held in high esteem.

The Hamilton Herald is the name of a new one-cent evening paper. The *Herald* shows marks of push and enterprise, and we believe will make a place for itself in a field which cannot be said to be overcrowded.

MANUFACTURES AND MATERIALS

RECENT CANADIAN PATENTS.

House Sewerage System.

No. 31,333. George McNeill, Ottawa, Ont.

Claim.—1st. A system of house drainage consisting of a vertical central ventilating pipe, having its lower end connected with the street sewer by a continuation laid with a proper fall, an egg-shaped trap connected to said pipe by a short outlet pipe placed some distance from the bottom of said trap, and the waste pipes of a building having their lower or discharge ends connected with said trap below its connection with the ventilating pipe. 2nd. A trap consisting of a vessel having a removable cover, an outlet placed some distance from the bottom, and branches below the level of the outlet for connection with the waste pipes of a building.

Extension Seat for Pew Ends.

No. 31,412. George F. Bambridge, Toronto, Ontario.

Claim.—An extension seat, consisting of back, seat and brace, to fold and shut into lower part of pew end.

Implements and Machinery used in the Manufacture of Brick, Tile and Earthenware, and Method and process of Using such Implements and Machinery.

No. 31,346. Albert S. Locke and Robert P. Locke, Toronto, Ont.

Claim.—1st. The adjustment of the cleats attached to the under side of any kind of pallet, so as to balance the weight of the bricks resting on the pallets, and the construction or adaptation of moulds and dies to correspond with the position of the cleats on any such pallet. 2nd. The improved method of manufactuing bricks and tiles by means of pallets, moulds and dies, constructed and arranged as herein described. 3rd. The arrangement of the cleats at intermediate points under the pallets, and the construction of pallets of lighter or thinner material than any now in use, the cleats being moved towards the centre of the pallets, the material of which the pallet is made does not require to be so stiff, strong or thick as in pallets having the cleats at or near the ends. 4th. The combination of pallets, moulds and dies, having spaces between the cavities, and between the holes in the dies corresponding to the position of the cleats on the pallets. 5th. The cleats made with holes or arches instead of being solid, thereby decreasing the weight and allowing the free circulation of the air through the bricks when drying. 6th. The method of equipping a brick yard cheaply, by means of a system of pallets, moulds and dies above described. 7th. And also we claim as our invention the above described method of constructing pallets, cleats, moulds and dies, and the combination of and methods of handling and using the pallets, cleats, moulds and dies above described, and in any form or way in which the same may be combined or used in the working of a brick and tile yard or factory, substantially as and for the purpose hereinbefore set forth.

Kenneth Chisholm, M.P.P., Brampton, Ont., quarry owner, has assigned.

The Howard Furnace Co., of Berlin, Ont., (limited), with a capital stock of $24,000, has recently been incorporated.

The sewer pipe trust at Pittsburg has dissolved. The small dealers undersold the trust. Prices are now lower than ever.

It is reported that Cleveland, Ohio, capitalists have about completed arrangements to establish an iron tubing factory in Ottawa. The syndicate possesses a new welding process.

Suit has been entered by Mr. R. Forsyth, of Montreal, Canadian agent of Mr. Peter Smart, Edinburgh, holder of the Canadian patent for composite pavements, for $5,000 against Mr. G. Baccerini, of the same city, for alleged infringements of patent.

A new hydraulic brick is now manufactured in eight different shades of red and brown which, on cheap houses, is designed to supply the place of brownstone or sandstone for trimmings. The shades of color run from a rather dark brown to a reddish hue, and at a superficial glance might well be taken for the stones the place of which they supply.

THE NATURE AND USES OF ASPHALT.

IN a paper read before the Society of Arts at the Massachusetts Institute of Technology, Capt. F. V. Green states that asphalt is a variety of bitumen, found in a native condition and not manufactured, and in a solid form is commercially known as glance pitch. Glance pitch is found in limited quantities in various parts of the Rocky Mountains and Texas. It is very pure and is used to make a high grade of varnish, but its brittleness makes it useless for paving or roofing compounds.

The asphalt of Trinidad is found in a so-called "lake" about 130 feet above the sea-level, on the island of that name. The "lake" is a level tract, about 114 acres in area, of brownish material of an earthy appearance. It is sufficiently hard to bear the weight of carts and animals, and yet its consistency is such that excavations fifteen feet in depth are filled up by the flow of adjacent material in a few months. It is estimated that the amount of asphalt in the lake is upwards of six million tons. On partial analysis it yields approximately 40 per cent. of pure bitumen, 40 per cent. of earthy and vegetable matter, and 20 per cent. of water. The material is heated in large tanks at a temperature of about 300° Fah., to drive off the water and let the larger portions of the earthy matter settle and the vegetable matter to be skimmed off the surface. This refined asphalt contains about 60 per cent. of pure bitumen and 40 per cent. of finely divided earthy matter invisible to the eye. This material is too brittle for commercial use, and it is therefore mixed with a heavy, dark oil, known as the residuum of petroleum, in the proportion of six parts of asphalt to one of residuum. This is the material so largely used in paving and roofing compositions.

On the coast of California, near Santa Barbara and also in certain portions of Colorado, Utah and New Mexico, are found large beds of sandstone containing from 15 per cent. to 20 per cent. of bitumen, and it is from these mines that the asphalt pavements of various cities in Europe have been obtained. Those most suitable for paving contain about 10 per cent. of bitumen and 90 per cent. of fine limestone.

The uses of asphalt may be divided into five classes—viz.: 1st, as a varnish for paint; 2d, as an insulating material; 3d, as a water-proofing material; 4th, as a cement in ordinary construction; 5th, as a cement in roofing and paving compounds.

CANADIAN ARCHITECT AND BUILDER

FINE AND INDUSTRIAL ARTS · DECORATION · FURNISHING
CONSTRUCTION · SANITATION · ENGINEERING

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—THE—

Canadian Architect and Builder,

A JOURNAL OF MODERN CONSTRUCTIVE METHODS,

PUBLISHED MONTHLY IN THE INTEREST OF

ARCHITECTS, CIVIL AND SANITARY ENGINEERS, PLUMBERS, DECORATORS, BUILDERS, CONTRACTORS, AND MANUFACTURERS OF AND DEALERS IN BUILDING MATERIALS AND APPLIANCES.

C. H. MORTIMER, Publisher,

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SUBSCRIPTIONS.

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In ordering change of address give the old as well as the new address. Failure to receive the paper promptly should be reported to this office.

ADVERTISEMENTS.

Prices for advertising sent promptly on application. Orders for advertising should reach the office of publication not later than the 12th day of the month, and changes of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The Ontario Association of Architects has appointed the "Canadian Architect and Builder" its official paper.

MR. W. WEBSTER'S experiments at Crossness, for treating the sewage of London with a view to its purification by electricity have so far been successful that the London City Council has engaged an electrical engineer to watch the undertaking in its behalf, and over 11,000 tons of lime and sulphate of iron have been ordered for use in carrying on the new method.

IT gives us pleasure to see the Hamilton City Council waking up to the necessity of providing the citizens with a number of easily accessible parks. Hamilton and Toronto are both sadly deficient in this respect. The sooner steps are taken to procure the necessary park property, the better it will be for the taxpayers, as the cost of land in central localities is increasing very rapidly.

THE Dominion Trades and Labor Congress will ask Government to declare that eight hours shall constitute a day's work. One prominent delegate to the recent convention expressed the hope that they would ultimately get the public educated up to the point of recognizing six hours as a fair day's work. If our observation is not astray, there are not a few "labor representatives" who secretly cherish the hope that eventually they will get paid for doing nothing.

IT was somewhat amusing to read in the daily papers a fortnight ago that in anticipation of the crowd of visitors to the Toronto Industrial Exhibition, the Building Inspector was determined to enforce the by-law limiting the amount of space on the public thoroughfares which may be occupied by materials for use in buildings under construction. It is a well-known fact that the provisions of the law in regard to this matter have been disregarded in a great many instances, and this gives rise to the question, why is not the law enforced at all times, instead of only at Exhibition time? The convenience of the citizens of Toronto and those who pay the city taxes are surely entitled to as much consideration as those of residents of other places who pay Toronto a visit once a year.

THE St. Johns, Que., *News* says: "We want waterworks badly in this little factory town, and any company who will undertake to supply the same will find the investment a profitable one. Nature has done her share of the work. Copious springs are located on Pine Hill." If the natural sources of water supply are so advantageously at hand, and profitable results so certain, why do the citizens of St. John fold their hands and wait for some outsider to come along and make money out of the enterprise? Why does not the corporation build a system of waterworks, and apply the profits to reducing municipal taxation? If there is an opening for an individual to make money, there should be an equal chance for the municipality. We have more than once pointed out this fact, together with the advantages arising from the ownership and control of the water supply being vested in the municipality instead in of the hands of a private company.

THE growth of the electric bell business in Canada during the past few years has been truly surprising, and the manufacturers of the ordinary door bells have felt the opposition so keenly that they have been putting forth all their efforts to produce a bell that would resemble the electric bell as much as possible, both in appearance and tone, and at the same time be sold at a low price. The latest result of these efforts is a clockwork bell intended to be placed on the inside of the door and wound up by turning the gong around. A mechanical push button is placed on the outside of the door, and on being pressed releases the clockwork in the bell, which produces a vibrating ring much similar to the electric bell. This imitation is all very well as far as it goes, but it costs more than the electric bell, is more liable to get out of order, and besides the bell and push button have to be placed close together, so that the new arrangement is at the best only adapted to certain circumstances which seldom exist.

AFTER a series of changes and delays covering a period of several years, the work of erecting the new municipal buildings for the city of Toronto and county of York, has at last been commenced. It is to be hoped the period of delay is ended, and that this important undertaking will now be pushed straight through to completion in as short a time as may be necessary to ensure good workmanship. We share in the regret expressed by the Mayor that a competent commission was not appointed to superintend the work. We still believe that the appointment of such a commission would have proved an economical step in

the interests of the property owners. Should the erection of these buildings proceed expeditiously, economically, and in accordance with the specifications, under the charge of the Court House Committee of the City Council, we shall be delighted to admit that our doubts of their ability to carry the work to a satisfactory completion were ill-founded. In the meantime, the ratepayers having by their votes declared that no commission shall be appointed, we can only hope that time will justify the wisdom of their decision.

HE lacks discretion and a correct appreciation of the value of human life who goes in search of a gas leak with a lighted match. The last man whom we would suspect of adopting such a fool-hardy method would be a plumber; yet we learn that this is exactly what a Montreal plumber recently distinguished himself by doing. After the gaspipes had been placed in a new block of stores and dwellings owned by G. W. Stephenson, St. Catherine street, a smell of gas became noticeable. The plumber in question undertook to find the leak in the manner stated. When he applied the match to the spot from which the central gaselier was to be hung, the whole ceiling suddenly took fire, and a terrific explosion followed, throwing the plumber violently from the ladder to the floor. Fortunately he received no serious injury. A large portion of the ceiling was thrown to the floor and the plate glass window in the front was thrown into the street in a thousand atoms. Three men employed in the store and three carpenters were in the place at the time, and, while some of them were thrown to the floor and partly covered with *debris*, they were so fortunate as to escape without any injury except a few scratches and bruises.

WE should like to see the Toronto Industrial Exhibition Association offer a series of prizes next year for competition among Canadian skilled workmen. It is a matter of regret that at present no reward is held out in any direction to the Canadian artisan for excellence of workmanship. At the exhibitions held in Toronto, and in other cities and towns throughout the country, the prizes are all for the manufacturer, none for the workman. The workman, whose skill secures the prize, must be content to remain continually in the background, while his employer receives all the credit with the accompanying financial benefits. We cannot but regard this as an unfortunate condition of things for both employer and employee. So long as it is allowed to continue, it can scarcely cause surprise that only a very small proportion of our workmen attain to a high degree of skill. Aside from the prospect of securing higher wages, there is nothing to stimulate their ambition to excel in their respective callings. That some higher object of ambition should be placed before them, all will admit. Public recognition and encouragement of the artisan classes would provide manufacturers and employers with a more plentiful supply of skilled labor, and maintain the efficiency of our national industries in competition with those of other countries. This subject is already receiving attention in England and the United States, and Canada cannot afford to lag behind.

SOME Toronto architects have recently adopted the practice of nailing upon the buildings which they are constructing notice boards with their name and address conspicuously painted thereon. It may interest these gentlemen to know what the London *Builder* thinks of the practice. Our English contemporary says:—"It is one which all those who care about the honor and dignity of the architectural profession ought to do their best to oppose and put a stop to. Some of those who put out these tradesmen's advertisments, of course, are mere hangers on at the skirts of the profession; but it is done by others who ought to know better and to have more sense of dignity and professional propriety. There is no other liberal profession in which this kind of thing would be done. What would be thought if, when straw laid down in the street gives the outward sign of a serious case of illness, a board were fixed up on the house with the notice—'Case attended by Dr. Forceps, 200 Harley street'? We venture to think that if any medical man were so regardless of his own dignity as to do this, he would very soon find public opinion within his own profession too strong for him. And why does not public opinion within the architectural profession put down this vulgar and undignified form of touting? We should like to know what the Council of the Institute of Architects think of members of the Institute who degrade the status of the profession in that way? And if they do think pretty strongly about it (as we should imagine,) will they tell these advertising gentlemen what they think."

IN criticising the terms of the Hamilton Public Library Building Competition in the May number of this journal, we made this statement: "The value of building material and labor in Hamilton must be only one-half what they are in other places if the sum of $20,000 is sufficient for the erection of the building. On the dimensions given the building will cube about 400,000 cubic feet, which, at 5 cents per cubic foot, would give $20,000, the proposed cost of the building. We believe that we are well within the mark when we state that 10 cents per cubic foot will no more than cover the cost of such a building, and then there will be nothing spent on ornamentation." The soundness of this opinion is justified by the tenders which have been sent in, the lowest of which amounts to between thirty-three and thirty-four thousand dollars. This is exclusive of architects' fees, $1,500, and furniture, $2,000. The committee now find themselves face to face with a deficit of $13,000, and are compelled to go back to the city Council for further assistance, while the architect will probably be asked to alter his design with the object of reducing the cost of construction. The Building Committee who have thus walked into a difficulty with open eyes, are deserving of little sympathy. They ought to have known better. It is to be hoped that the blunder they have made will serve as a warning to building committees in the future not to make themselves ridiculous by asking architects to attempt the impossible. If fine buildings are required, funds for their erection must be provided on a liberal scale. So long as the funds are meagre, those charged with their disbursement must be satisfied with unpretentious buildings.

MR. A. M. WELLINGTON'S scheme for the improvement of the Toronto Esplanade has been submitted to the Board of Trade of that city and to the public through the medium of the daily papers. It has received a flattering reception. The daily press speaks of it in terms of unqualified praise, and appears to believe that it is as nearly applicable to the requirements as anything which could be devised. The citizens' organization formed to watch the interests of the citizens of Toronto on the Esplanade, has yet to be heard from. Many have refrained from expressing an opinion until the report of the experts appointed by the City Council shall have been given to the public. We do not propose at the present time to consider at length the adaptability of Mr. Wellington's scheme. We differ, however, from those journals which seem to regard it as perfect. In our judgment, it certainly is not the best arrangement for the purpose. Under it the improvement of the water front will extend no farther west than Simcoe street. West of that the water front is to be shut off from the city by railway freight yards. The proposal to convert a large area on the Esplanade, opposite the center of the business portion of the city, into a public park, is not a commendable one. The Esplanade property now occupied by the railway tracks should be utilized so that it may be made to yield a revenue to the city which would go towards paying interest on the cost of the improvements. The fact that no provision is made for this purpose, is a weak point in Mr. Wellington's scheme. The proposed park might be more advantageously located elsewhere. What is more required on the water front, is a promenade. The scheme submitted by Mr. Wellington contains little that is original, its main outlines having been presented to the citizens before, while in many of its details it is open to serious objection. However, it is valuable in the sense of being a help to the solution of what is certainly an important and difficult problem.

THE close of the contractors' "busy season" is approaching, and the hope returns that during the coming winter months steps will be taken to organize a Canadian Association of Builders and Contractors, with the object of remedying the many evils which have crept into the business. These evils, many of which were pointed out in the series of articles on this subjec published recently in the CANADIAN ARCHITECT AND BUILDER, have so affected the business, that it is scarcely possible any longer for those engaged in it to secure a living profit. When competition has been carried to this pitch in other lines of business, the men whose interests are affected usually adopt the common-sense view that they are acting the fool's part in cutting one another's throats for the benefit of the public, and proceed to organize for mutal protection. There is ample evidence to prove that the majority of Canadian contractors are doing work at unremunerative figures. A very large number of them are doing even worse than this—absolutely working for nothing, or at a loss. This is a suicidal policy which must end disastrously to all who pursue it. If an association were formed embracing the best men in the ranks of the master builders, the members of which should pledge themselves to refrain from cutting prices to an unprofitable extent, the inferior men who are prepared to sacrifice everything in order to secure a contract, might very well be left to the task of devouring one another and making way for a better order of things. The correspondence on this subject from various towns and cities throughout the province which was published in this journal several months ago, proved conclusively the existence of the evil to which we have referred and a number of others scarcely less damaging, as well as a desire on the part of many master builders for an association to deal with them. The opinion seems to prevail, however, that the initiative should be taken by Toronto men, as representing the largest city in the Province. This is a reasonable view, but we regret to state that thus far Toronto builders have manifested much less interest in the matter than those of other places. Their careless attitude cannot be accounted for on the ground that they do not suffer from the abuses referred to, for we can can bear personal testimony to the fact that nowhere have these abuses pressed more heavily than on the shoulders of Toronto contractors. We trust that in a matter affecting so vitally the contractor's pocket, the legarthy of the past will soon give way to determination to adopt intelligent means to secure the fair rewards of honest effort. Our columns will be at all times open for the discussion of this subject.

THE Dominion Trades and Labor Congress, at its recent meeting in Montreal, discussed the subject of technical education. Its views thereon are embodied in the following resolution: "That this congress, while favoring a judicious system of technical education, considers that the system of manual training in our schools, such as proposed by the Minister of Education in Ontario, is prejudical to the interest and welfare of mechanics and wage earners generally." The discussion which took place on the above resolution shows that the proposal to introduce a system of manual training in the public schools is opposed by the representatives of the unions through fear that it might add to the competition in the labor market, and that some of the "botches" which it is claimed such a system would produce may supplant some of the skilled union laborers. One delegate is reported to have said that "The element he most feared was the theoretical mechanic, who, having friends and influence, crowded practical mechanics out in the cold." Could anything be more absurd than such a method of reasoning? It is a well known fact that a botch cannot do the work of a skillful mechanic, and that a theorist cannot fill the place of a mechanic trained in the school of practical experience. Yet here we have the spectacle of men calling themselves practical, skilled mechanics, acknowledging themselves afraid of the competition of a lot of botches and theorists. Surely such men show but little confidence in their own mechanical ability, and will have no cause to complain if employers of skilled labor take them at their own estimate.

The tenor of the discussion throughout clearly showed that the delegates to the Congress misunderstood the objects of the system of training which the Minister of Education proposes to introduce. It is not the intention, we believe, to attempt to teach trades in the public schools. Such a proposal would be impracticable in the short period which a boy usually devotes to acquiring an elementary education in the public school. The purpose of the Minister of Education, as we understand it, is simply to make the pupil familiar with the underlying principles of mechanical law, provide means by which he may become acquainted with the purpose for which different tools are used, and perhaps acquire a certain amount of adaptability in their use. This we believe to be the very outside limit to which such a system of instruction could be carried in the public schools, and the effect of it would be to give the boy who intends to learn a trade a start under more advantageous circumstances than at present. It can readily be seen that a boy who enters the workshop possessed of such a preparatory training, will make more rapid progress and ultimately develop into a more intelligent and competent workman, than the lad who commences to learn a trade without any knowledge whatever of mechanical theory, and is compelled to grope for years in the dark before finding out the why and wherefore of things. The youth who would be most benefitted by such a course of instruction would be the sons of mechanics, who are in many instances without the means to pursue a University course and enter the ranks of the over-crowded professions. In view of this, the opposition of those professing to speak on behalf of skilled labor, seems singularly ill-advised and ungrateful. It would be interesting to have a definition of the "judicious system of technical education" favored by the Trades and Labor Congress.

AN ERROR CORRECTED.

IN the CANADIAN ARCHITECT AND BUILDER for August the statement appeared that the Government had accepted the plans of Mr. Alex. White, of Woodstock, for the new drill shed at Brantford. We presume the information was obtained from one of the Brantford papers, its manifest incorrectness having unfortunately overlooked. Mr. H. James, chief architect of the Militia Department, writes us on the subject as follows: "I notice a paragraph in your paper for August re the Brantford drill shed which is entirely incorrect. Mr. Fred. White of this office took my preliminary plans of this building to Brantford for the inspection of the officers and citizens interested, and I am now busy preparing the drawings necessary to obtain tenders, which I expect will enable the work to be commenced about a month from now."

"CANADIAN ARCHITECT AND BUILDER" SERIES OF PRIZE COMPETITIONS.

THE announcement was made in the August number of this journal of our intention to institute a serie of prize competitions, the details of which were to have been published this month.

After giving the matter further consideration, we have decided to elaborate a series of competitions which shall extend over a period of six months or more, and prove a source of interest and profit to our readers throughout the coming year. As the architects' offices are yet crowded with work, and the time of students consequently fully occupied, full details of the entire series of competitions will be held over for publication in our October number.

In the meantime, however, we invite competitive plans for a serving pantry, 100 square feet in size, showing cupboards, shelving, etc., with details of same. For the best design sent in, a prize of $5 will be paid, and for the second best design, one year's subscription to the CANADIAN ARCHITECT AND BUILDER.

Drawings must be made on sheets of heavy *white* paper or bristol board, 14 x 20 inches in size, and must be drawn to allow of their being reduced to one-half the above size. Drawings must be made in *firm, strong lines*, with pen and *black* ink. No color or brush work will be allowed.

Each drawing must be marked with the *nom de plume* of its

author, and the author's name, *nom de plume* and full address, enclosed in sealed envelope, must accompany each drawing sent in.

All drawings must reach the office of the CANADIAN ARCHITECT AND BUILDER, 14 King St. West, Toronto, on or before the 1st day of November next.

We reserve the right to publish any design sent in.

A committee appointed by the Architectural Guild of Toronto will decide the merits of the various designs.

Drawings will be returned to their authors within a reasonable time after the committee has given its decision.

OUR ILLUSTRATIONS.

HOUSE FOR MR. J. H. BENNET, BARRIE.—EDWARDS & WEBSTER, ARCHITECTS, TORONTO.

THE materials are red brick with shingle gables and roof. On the ground floor are a large square hall, a drawing room, dining room, "den" and kitchen. The first floor contains a sewing room, opening on the balcony, and four bed rooms and a bath room. Three of the bed rooms average 14 ft x 16 ft. The attic can be utilized for three more bed rooms of good size and a store room. Hot water heating and the latest improvements in sanitary plumbing.

SUMMER CLUB HOUSE FOR THE "ROYAL NOVA SCOTIA YACHT SQUADRON," HALIFAX.—MESSRS. EDWARDS & WEBSTER, ARCHITECTS, TORONTO.

This little building, though intended for summer use only, is very substantially built. The material is frame on a foundation of brick piers. The exterior walls are covered with stained shingles laid in straight lines 3½ inches to the weather. This gives a more quiet and architectural effect than where the shingles are cut as has been the fashion of late years. The color of the walls is a brick red, and that of the roof sea-green. The trimmings are yellow and green, and the window sash white. Inside the walls are lined with clear pine and varnished.

The entrance faces the street, and as the view is taken from the water front, very little of the porch is seen in the sketch. The club room occupies two-thirds of the first floor of the building and opens on the balcony. There is a large brick fireplace with built-in seats, etc. The windows of this room are filled with amber tinted, wrinkled glass. There is also a Secretary's office and a locker room on this floor. The ground floor contains lavatories and one large store room. The janitor is well provided for in the attic.

MEASURED DRAWINGS COMPETITION OF THE TORONTO ARCHITECTURAL GUILD—"THE EASTERN ENTRANCE OF TORONTO UNIVERSITY,"—PRIZE DRAWING BY MR. E. WILBY, TORONTO.

MANUAL TRAINING.

THE subject of industrial education has been brought prominently before the public by the opening last week of a Manual Training School in connection with Woodstock College, at Woodstock, Ont. During the last six years many such schools have been established in various parts of the States, notably in New York City, Philadelphia, Cincinatti, Cleveland, Toledo, Chicago, St. Louis and New Orleans. These schools are all more or less intimately connected with high schools or colleges in which the student receives training during part of the day in the ordinary branches of a liberal education.

A brief description of the Woodstock School, the first to be established in Canada, will undoubtedly be of interest to our readers. A brick building, two and a half stories high, 32 by 80 ft., thoroughly lighted, has been erected. On the first floor is a ten horse power gas engine, connected with suitable line shafting to drive a combination planer, moulder and matcher, a combination rip and cross-cut circular saw, a large 20 inch wood lathe and a scroll saw, in the wood turning department; a scroll lathe, a planer, an emery wheel and a milling machine, with gear cutting attachments, in the iron working department; a forge and anvil in the blacksmith department, to which many more will be added as soon as the first class reach that stage in their course. On the second floor are benches and very complete kits of carpenters' tools, for a class of twenty. During the winter a dozen wood lathes will be fitted up. A roomy attic is used for storage.

Regularly the class will spend the day until three p.m. in the college class rooms, and from three to five in the Manual Training School. They begin with carpentry, proceed to wood turning, wood carving, forging, and machine work, through a four years' course. From the beginning, drawing will form an important feature of the course. Every piece of work attempted, be it small or large, must be fully and accurately drawn to scale. No expectation of deriving any revenue from the sale of manufactured articles is entertained. The object is to utilize tools, machinery and material in the education of the practical side of the boy. In the morning the pupil is discussing the theoretical side; in the afternoon the practical; in the morning he investigates principles in the abstract, in the afternoon he applies those principles to the concrete, the wood, stone or metal.

The object is not to teach a *trade*, but to give an all round and practical education. At the same time the pupil will gain some degree of dexterity in the use of both wood-working and iron-working tools, some considerable ability to express any thought by means of the draughtsman's pencil, and to interpret drawings, a fair knowledge of woods and metals, which will be of the greatest value to him in after life. Should he afterwards enter a factory, his intelligence and knowledge of principles would soon advance him from the bench to the position of foreman, and from the position of foreman to that of master. Brains are in demand in our shops.

Persons wishing further information about the manual training department of Woodstock College will obtain it by addressing the Principal, W. H. Huston, M. A., or N. Wolverton, B. A., the Superintendent of the Manual Training Course.

RIGHTS OF ARCHITECTS.

AT the International Congress of Architects, Rouen, the Secretary M. Lucas, introduced the following, defining the rights of the profession:

1. The architect ought to possess the same right of controlling the reproduction or copying of his architectural work that is possessed by the painter, the sculptor and all other artists.

2. The architect, like every other artist, should reserve to himself the exclusive right to reproduce, or authorize the reproduction of his work; and any law which might be made in favor of the protection of any artist, should apply to the architect.

3. Any architect who had conceived a plan of an edifice or directed its erection should have the right to inscribe upon it his name and profession.

BRICK FOR STREET PAVEMENT.

A CORRESPONDENT of *Science* states that about 50 towns in the United States use brick for paving the streets, and some have used it for as long as 15 years. Common building brick is quite unfit for the purpose, as it soon shows the effects of wear, but good hard brick always gives satisfaction. No paving material is equal to it except granite blocks, and it costs only a third of the latter. The most suitable bricks are those made from the common yellow joint clay, having a large percentage of silicate and iron. The laying of a brick pavement, the writer says, is a simple matter. The foundation being brought to the proper grade, there is spread over it 6 in. of gravel or sand, which is struck off with a board gauge fitted for the grade of the street. A course of brick is then laid on the flat surface, running lengthways along the streets. It is not necessary that this should be as hard as the upper course. Over this an inch of screened sand is spread, gauged, and properly smoothed off. The top course is then laid with the bricks on their edges lengthways across the street, the joints being broken in both courses. The whole is covered with an inch of screened sand, which is swept into the crevices. A roller weighing five or six tons is then passed over the pavement several times, and if this is properly done the pavement will be as smooth as one of wood, and almost as noiseless. The street must be drained, as the lasting qualities of the brick and the even surface of the street depend greatly on the drainage. The upper course should be very hard and of vitrified brick. Horses do not slip or fall on brick pavements, owing to the small surface between the seams. If water and frost are kept out of brick the pavement is almost indestructible.

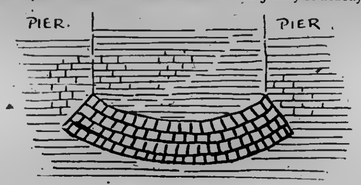
THE "INVERTED ARCH."

TORONTO, August 20th, 1889.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—Will you kindly give me a little information on the subject of "inverted arches?" As an amateur, I have been rather taken with the principle of this feature of construction, but my ideas on the subject received a rude shaking up recently when, in passing along Front street, at the north west corner of Front and Yonge, I came upon the basement walls of some rather large looking building that possibly you may have noticed some time, and which a little boy informed me was for the Board of Trade.

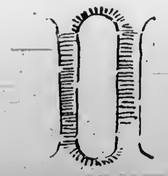
You must excuse me if you find it difficult to understand me, because your technical terms are rather hard for an amateur to remember, but I will try and describe as briefly as possible what I saw. There were some big upright piles of brickwork measuring about 7 feet in front. I suppose you would call them "piers" very likely, and these things were about 7 feet apart. Well, between these, low down, was, and I suppose is, for that matter, the "inverted arch," which, according to my preconceived notions, ought to distribute a certain amount of the weight of the piers along the foundation. "Well," thinks I to myself, "devil-a-bit of weight will those things distribute," and then it occurred to me that perhaps I was wrong and the arches right, and when a workman told me that the architect was from some place in the States, and his name was Jimmy somebody, I for-



get what, I thought it would be to my peace of mind to find out from someone likely to know, whether I was right or wrong in my ideas. Now I heard of your paper through a friend, and he told me you knew all about this kind of thing, and that if I wrote to ask you, you would give me an answer in your next month's paper. I shall look out for it, I can tell you, for either I am wrong or else that blessed building will be very weak on its pins.

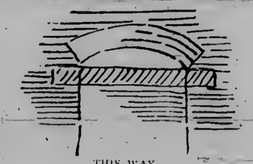
Now these arches, Mr. Editor, are made of (if I remember rightly) about *four* thicknesses of half bricks, rather loose, with about an inch between each brick, filled up with what I took for mortar. The arch goes right through the wall, of course, from front to back, or back to front, I am not sure which way you would say, and then funnily enough, upon the upper curve of the arch which, poetically speaking, I may call its "bosom," stood a pile of brickwork filling up between the two piers. I'll get my son to try and draw the thing as it is, and then as I thought it ought to be, for I'm blessed if I don't think I'm right after all. Well, as I looked at the thing, I said to myself, if that mortar was to take it into its head to get squeezed out from between the brick-ends by reason of the brickwork above pressing down upon it, the part of the pier on the arch at each side will go down about two inches, while the middle of the pier which does not touch the arch will stand where it is put; and all that brickwork lying in the "bosom" of the arch will only help to add to the discomfort of the poor crushed arch bricks, which, if it was not for the brickwork below, would certainly give way under it. As I was told that the drawings for all this work came from the architect perhaps this is the American way.

This, which is coming now, is the way I thought it ought to be done in. To stop the pressure of the piers the arch ought to be in some way proportioned to the width of the piers, and the joints ought to be very fine so that there might be no squeezable stuff, only the hard bricks, and for this cement would be better than mortar. If the arch only supports a narrow bit of the pier on each side, the rest of the pier must be standing on the foundation, and part of each pier would then be on a different foundation to the other part, which I was thinking was not the object of the arch. I was told once by an engineer,—I don't mean the driver of an engine but the man that, so to speak, drove the men that drove the engine, or drove the men that *made* the engine (something like that his work was)—well, he told me, that if it was not for the *gravity* of the bricks, that was, he said, the drawing of them towards the earth, one might build piers with an arch at the top and an inverted arch at the bottom, right up in the air oft the ground, because you see the weight of one pier comes down to the arch, runs round it and goes up the other pier, and the weight of the other pier counterbalances it, and so there's no weight at all in this method of construction. I could not understand that, and I told him that if it was not for the *gravity* of the bricks he spoke of, I should have thought them uncommonly *risible* things; but perhaps you will know what he meant.

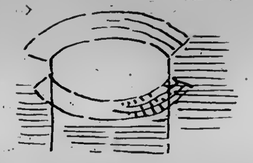


If one wanted very much to pile on the bricks between the piers, would it not be better to make them stand on a good thick stone, or on another arch turned right way up leaving a round or oval space between, according to the form of the arch? Well as to the thickness of the arch, or the number of half brick or brick rims, that depends on the width of the pier on "face," and the length of the "skew-backs" (is not that what you call them?) together should in my humble opinion be made to balance the width of the centre part of the pier—that is, I mean, they should bear in their length a relation similar to that borne by the width of the pier to the width of the space.

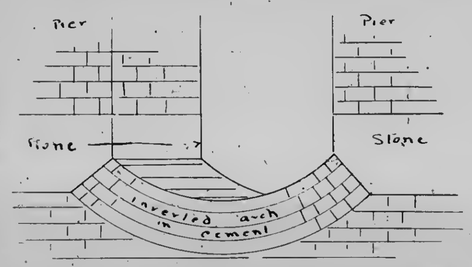
Another point which is of importance I should have thought, would be the equalizing of the weight of the piers as much as possible, and a good way to bring this about is to put a stone as my son has shown in this sketch at the foot of the piers against which the skew-backs of the arch would abut. You see by this means, the pressure of each pier would be conveyed by the arch to the next pier, and along the stone to the next arch, and so on all along the building; but of course, each pier having an equal weight, the pressure of the pier mentioned would meet the other, and would be stopped and counterbalanced by the other. Now then you will see my point without your glasses—if the arch is made in mortar and with wide joints, with the weight of half of each of the piers on each side of it, that mortar is going to have a bad time. It will be squeezed out and the bricks will close together and the piers will move. I should have said that my stone ought to be pretty thick from top to bottom, because otherwise I should think it would be likely to crack from the lower part of the "skew-back" upwards.



THIS WAY.



OR BETTER STILL, THIS WAY.



Please tell me what you think of my son's drawings at the same time. He calls the last one a "perspective view" and that shows how the stone above the "skew-backs" goes right through the wall, like the arch, which is what I wanted you to understand.

I hope you will be able to find time to write me an answer, and waiting for it, I am,

Yours truly,

AMATEUR.

[Answer. We are very pleased to tell you that your suggestions as to the construction of the inverted arch are quite correct, and you are right in your opinion of its importance and its functions. The inverted arch is a dangerous thing to play with, because unless it is constructed with the greatest care, it is worse than useless—it becomes a trap. Many men employ it, and it looks simple enough; and so it is, but to those who do not understand its principle and make use of a clumsy substitute for it, it is a delusion and a snare; in fact what they think is an inverted arch is nothing of the kind and will never answer its purpose. We are sorry to hear that the arches at the particular building you mention have been roughly put in, but as it is all covered up now and out of sight, we have been unable to see them for ourselves and we hope the architects noticed the defects and had them remedied. But the proof of the pudding, you know, is in the eating. When the piers are built up, if the arch is not strong enough to support them, defects will very soon appear. Do not be disappointed when we say that we can hardly give a fair opinion of your son's draughtsmanship from the few specimens before us, but if he will call and show us some more of his own work we shall be pleased to tell you what we think of them.—THE EDITOR.]

According to *Indian Engineering* the tensile strength of a rope is only one third when it is wet of the strength of same rope when dry. When saturated with grease or soap the strength is even less, the lubricants permitting the fibres to slip on one another more readily. Hemp rope contracts greatly when wet, a twenty-five foot rope contracting to 24 feet.

QUEBEC.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

THE building trade here this season is more active than usual, and in consequence the wages of mechanics have reached very unusual figures for this locality. First-class bricklayers are now being paid $4.25 per day; masons, $2.25; stone cutters $2.50; joiners, $1.60 to $1.75, etc.

Our main boulevard, the Grande Allee, is being very much improved by the erection of several fine residences, which, added to those put up during the last 10 years, makes the road one of which any city might feel proud. Its present condition, with its liberal width, (75 feet), its fine wood block pavement, the elegant residences on the south side and the Parliament buildings on the north side, forms a striking contrast to the wretched street of 20 years ago, with the serpentine approach to the old St. Louis gate, all of which was deemed necessary from a military point of view. In place of the old gate there now stands a graceful erection in castellated style with a stone arch spanning the roadway, above which the ramparts are continued across in unbroken line. The effect at night under the brilliant light of our electric light system is excellent, and causes old citizens who return to visit the "ancient capital" to open their eyes, as it is a standing belief that we are always retrograding. "Just like Quebec," unfortunately is held to express one's idea of all that is slow and non-progressive. Happily there are signs that indicate better things in the future.

Among the buildings on the Grande Allee above alluded to, are four dwellings being built for Ald. Bilodeau, at a cost of about $25,000. The fronts are of quarry face stone, with cut stone trimmings. Mr. P. Valliere, the well known furniture manufacturer, is also building a terrace of four houses at a cost of about $20,000 in somewhat the same style as those above alluded to. For the first-named terrace Mr. Elz Charest is the architect, the contractor being Mr. Paul Breton; Mr. Valliere's terrace is being attended to by Mr. Peachy, architect, the contractors being Messrs. Paradis & Cote.

The last front portions of lots to widen this thoroughfare on the south side have been expropriated, and corporation men are now laying the balance of the wood block paving, as designed by Mr. C. Baillargé, City Engineer.

MONTREAL.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

AUGUST, as usual, is rather a dull month with our architects, at least in so far as new work is concerned, as most of our clients seem rather inclined to get away from the dusty city and breathe the pure salt air of "The Gulf." We expect, however, that the crops generally having proved much better than was at first anticipated, the fall trade will be fully up to the average.

It is rumored that Duncan McIntyre, of Canadian Pacific Railway fame, contemplates erecting a private residence in Montreal this autumn that will eclipse anything of the kind in Canada.

Contractors and builders generally are very busy at present, as a large number of contracts have been let during the past few months, and the city has been awarding some heavy contracts for street paving and widening, &c.

BUILDING PERMITS.

It is right for every city to have a good strict by-law regarding the construction of buildings of all classes within its limits. Montreal has a sort of an apology for one, but it falls far short of the mark in my estimation. Such as it is, it seems very difficult to get an "English" copy of it. One clause of our by-law calls for the owner filling a blank form to be had at the office of the Building Inspector. It requires the description of the site, the class of building to be erected, the thickness of the walls, size and position of joists, rimbeams, columns, piers, the number of stories and the nature of the roofing materials used, etc., name of owner, architect and builder. So far, so good, but what I object to is, that after the owner has complied thus far, and before he can begin to build, he is obliged to get the Inspector's permit and pay a fee of $2 into the city treasury. Why this should be I cannot understand. It certainly appears a false principle to inflict a fine (for it is nothing else) on the person building as an inducement to conform to the city by-laws. If it were done in a small town, where no other provision was possible to raise the salary of the Inspector, I could understand it. It would be far better policy for the City Council to abolish this fee and issue permits without charge, as I hold it would be more in the interest of the city to encourage builders to take out permits and conform to the by-laws than to harass them in collecting this paltry sum.

ELECTRIC LIGHTING.

Montreal is determined to be the best lighted city on this side of the Atlantic, and I have no doubt but she will eventually succeed. During the past month the whole city and annexed suburbs have been lighted by electricity. The Gas Company has at last given way to the Royal Electric Lighting Co., who have lost no time in wiring the streets and putting up the necessary stations and machinery to fulfil their contract with the city. Every one prophesied that it would be impossible for the company to light the whole city in the time allowed by the contract, but time has proved the contrary, and at the very hour on the day mentioned the city was instantaneously lit up. Of course, I do not mean that it is perfect in every particular—it would be too much to expect a perfect transformation in such a short time—but it goes without saying that it is a vast improvement on gas. True it may, and probably does cost more, but it adds greatly to the appearance of the city, and gives one the impression that "it is alive." I will endeavor later on to give you full particulars of the system and details of their plant and buildings, which are I believe the best in America.

CITY HALL NOTES.

It is now an open secret that the Deputy City Surveyor is very anxious to follow the example of his chief and to get a step ahead of him if possible. He is asking three months leave of absence and a bonus of $500. It is high time that the tax-payers took hold of this sort of thing and instructed their representatives in Council how to act. I do not object in cases of sickness to allow civic servants rest, but I fail to see why they should be paid a "bonus" in addition to their salary—when we are told at every Council meeting that "there is no money for constructing drains, side walks or pipes for the citizens. If the applicant was an employee who had devoted the best years of his life in the service of the city, it might be pardonable, but now-a-days an official hardly gets into harness in the City Hall, before he wants leave of absence and a bonus—upon what grounds we outsiders fail to see. Perhaps it is because this is the season of the year that we do outside work, and the contractors use their influence to get the engineers a well deserved rest.

CORNER STONE.

Sir Donald A. Smith, on Saturday last laid the corner stone of the new Douglas Methodist Church on St. Catherine street, and at a collection afterwards taken up Sir Donald subscribed one thousand dollars.

PRINCE EDWARD ISLAND.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

THIS, the "Garden of Canada," has not much in the way of public buildings to interest the architect or builder, but it is interesting in very many ways. As a health resort it has no equal. While Prince Edward Island is extremely poor in minerals, its agricultural productions are more than double the quantity required for local consumption. The Island is well traversed by roads, and fairly good ones at that. A railway extends its full length, and is, if anything, a little longer than the island itself. The curves are rather "too utterly too too," but this is accounted for by the fact that a bonus of so much per mile was paid by the Government when it was built, and the contractors naturally found it paid better to curve in and out around creeks, &c., than to spend money in building culverts over same.

Engineers are also interested in the Island, from the fact that one of the Island's senators proposes to connect the Island with the main land by means of a sub-marine tube. Extensive surveys with this end in view have already been made, but the scheme has not yet taken any more practical shape. Communication with the mainland is at present kept up by the steamers of the Steam Navigation Co. in summer, and the steamer Stanley, which was expressly built in Scotland for this purpose, in winter, and is giving entire satisfaction, but she has only had one winter's trial so far.

SHIP BUILDING.

In days gone by ship-building was one of the principal enterprises on the island, as the various shipping registers will show. Of late years, however, this has gradually fallen off. With the exception of the past two years, little or no building was carried on. Your correspondent was fortunate enough to see a launch of very fine barkentine on Saturday last, from the ship-yards of Messrs. J. & J. Richards, of Bideford. I had no idea it would be such an interesting sight, it would puzzle the uninitiated how it could be possible to move such a ponderous mass of wood-work from its stocks in the yard to the waters below, without any machinery or power, but we had not long to wait. The tide was just at its height, and at a given signal, without the least noise save a gentle tap of a mallet the vessel glided gracefully down "the ways" and in less than one minute, was at anchor in the stream. Although it is nothing new to see a launch in this part of the island, yet I think every man, women and child for miles around was present. Just as the vessel was about to start a bottle of "aqua fortis" was handed Mrs. W. McLea Walbank, of Montreal, who in due and ancient form, named her "The Bonita." The vessel is quite a credit to its builders, is 397 tons register and is classed ten years A1 at Lloyds.

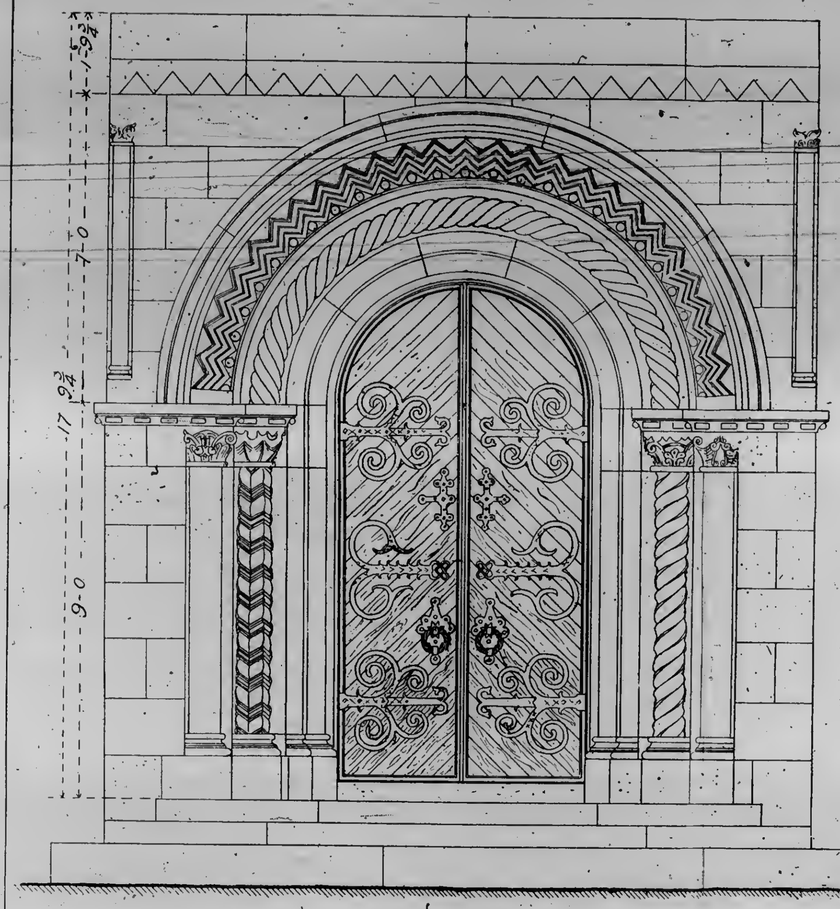
WINNIPEG.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

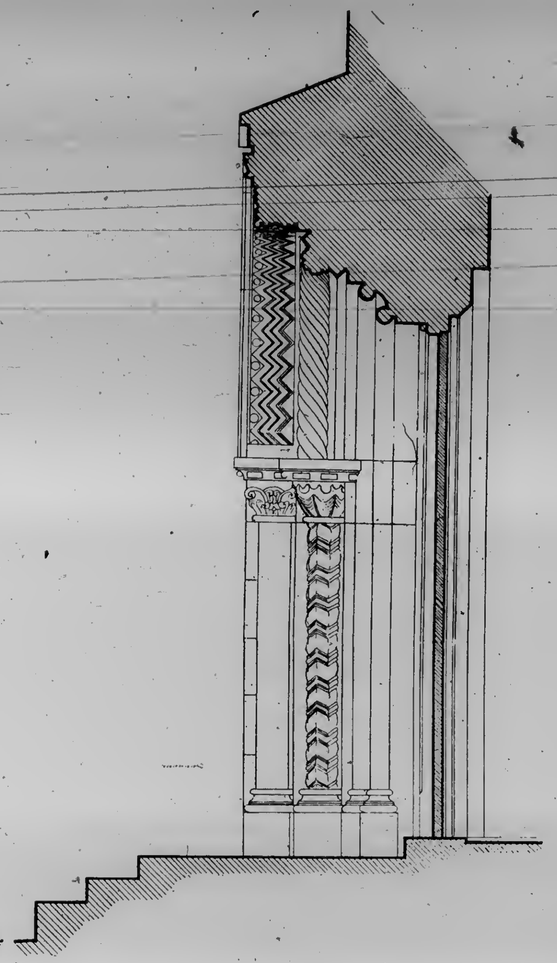
ALTHOUGH some of the contractors are complaining of work being slack in the city, and not a great amount in sight for the fall, yet, taking all into consideration, by the end of the year the total quantity of work will make up a good average, which is perhaps quite as much as should be expected, because there is no doubt the city was a little ahead of the province, there being buildings sufficient for the demand.

The N. P. & M. R. have commenced building their $300,000 hotel and depot, also round house, workshops, &c. Messrs. Rourke & Cass are the contractors who have been awarded the work, and are making that end of the city hum. They have about 700 cords of stone and 1,600,000 bricks to lay before the winter closes in. The hotel building is a very fine imposing structure of 7 stories, faced with St. Louis red bricks, with Bayfield brown stone dressings.

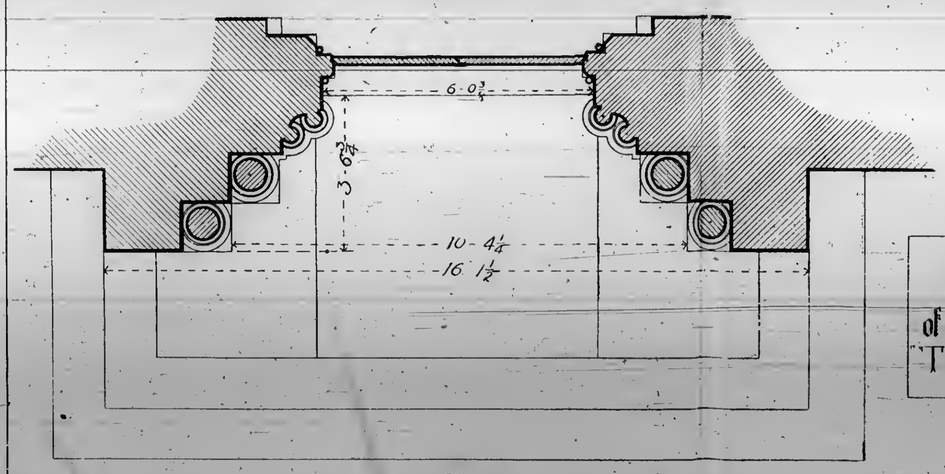
The Deaf and Dumb Asylum for the Government, to cost $20,000, the new Market Building, costing $25,000, Messrs. Jas. Robertson & Co.'s new



Elevation.



Section.



Plan.

0 1 2 3 4 5 6 7 8 9 10 11 12 Feet

Scale of Feet.

Measured Drawings Competition
of the Architectural Guild of Toronto.
The Eastern Entrance of Toronto University

PRIZE DRAWING—BY WILBY, TORONTO.

warehouse, $15,000, the Electric Light Co.'s power house, $17,000, Messrs. Ross & Foulds' block, together with other solid brick structures, has created such a demand for native bricks that those unsold now are being held at $13 per M., which is a rise of $3.

The outlook for next season is very good for the building trade, as it seems to be understood that American capitalists have determined to back up the energetic policy of the Northern Pacific, and invest largely in this city; in fact for some time past large commissions have been issued to purchase choice lots.

The wheat crop of the country turning out so much better than was anticipated, is another great reason to anticipate good times ahead.

The other towns are being built up faster than Winnipeg in proportion, such as Portage la Prairie, with its Home for Incurables, Torren's titles office, business blocks and numerous private houses; Brandon, with its new post office, reformatory, and very extensive new business blocks and houses; Carberry, Morden, Virden, Boissevain, Deloraine and many others are all coming rapidly to the front, with solid brick and stone churches, banks, business blocks, &c., so that the summary of the amount of money invested in building this year throughout the province will total up to large figures.

From a professional standpoint, the outlook is also better, as investors are gradually realizing the fact that there is something in having even the plainest material fixed artistically, and no matter how honest and well intentioned a contractor, he is only human, and in the absence of competition and superintendence, is very apt to get larger prices for badly executed work than is the case when an architect is employed. Principals are now alive to the fact that by paying a trained professional man, they get a good return for their money.

HOW TO ESTIMATE.

By "Cato."

NO deduction is usually made for the over-lapping of corners in figuring the cost of digging trenches for foundations, as the extra labor involved in making then covers the decrease in the quantity to be excavated.

When making up the cost of clearing a moundy site, or one which has stuff accumulated above the ground or street level, a more difficult method than those described must be worked out, to determine as near as possible the exact amount to be removed and its cubical contents. Should the contractor be called upon to tender for cleaning and excavating a site and cellar, either of rock or other stuff, he can find the solid content of it as follows:

27)25402½(966¼ cubic yards.

236

180

162

182

162

20

Find the highest point hilly or moundy surface, and take a tape line and measure from this point to the edge or line of the lot. Say that in this case the greatest depth is in the centre of the lot, which is 25 ft x 100 ft. To find the depth, or third side, supposing the tape line to register 54 feet.

54 feet length of hill.
50 feet length to greatest depth.

54 x 54=2916.
50 x 50=2500.

416 the square root of which, = 20.39, thus,

2)416(20.39
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20.39 depth, or 20 ft. 4 in. at center.

To find area of section: 100 x 10 1-6=1016⅔; 1016⅔ x 25 feet, length of front lot, = 25,402½ cubic feet.

The contents of the rectangular excavation below the street level can be found in the usual manner.

Should the mound or rock be nearly conical, it would be best to treat it as a cone or pyramid, and to find its contents.

Multiply the area of the base, if square, or rectangular, by ⅓ the perpendicular height as A B. If the base be found first, find the area by multiplying the square of the radius by 3.1416. Thus if the lot be 25 feet wide, 12½ x 3.1416=area. Area x ⅓ per height of conical hill=contents in feet. Again, if it be a round or circular heap of boulders then it is judicious to take the top, as of segmental or semicircular section, and figure thus:

Take the girth over the entire surface with a tape line (held loosely), and regarding this as the length of a segmental or semicircular arch, proceed, taking the ground level as the base or chord, for the former. Having found the rise or depth by leveling from the highest point, divide cube of rise by twice the chord or length of ground level and add to the result ⅔ of chord multiplied by rise (or depth).

For the latter: (502 x 3.1416) ÷ 2,=area of section.

Area x depth=cubical content.

The best way is to find the geometrical figure which the ground resembles in section as well as can be judged with the eye, and to apply the arithmetical rule covering the calculation of the solidity of the figure it resembles.

As all calculations of this kind can only be approximate. I would recommend estimators to allow a sufficient margin to cover contingencies, and if anyone is awarded the contract, to give it out to a contractor accustomed to removing and heavy excavating. It is manifestly unwise to undertake to do a job which is unfamiliar to the estimator.

BRICK VS. PIPE SEWERS.

IN view of the recent decision of the Toronto Board of Works which did away with pipe sewers of 15-inch and 18-inch diameter, in favor of brick sewers of a very small diameter, it may not be uninteresting to compare the comparative merits of both from various standpoints.

Taking a general view of the matter, it may be said at once, that the action of the Board was surprising to say the least, inasmuch as all modern authorities on the subject are agreed in saying that pipe is preferable up to such diameter as will warrant easy and cheap laying. This limit of size is pretty generally fixed at 24 inches. We hope we shall not be deemed impertinent if we inquire why the limit should have been fixed at a maximum of 12 inches for Toronto. It is beyond doubt that for a city the size of Toronto, a 12 inch street sewer is altogether too small; it is too small to carry off any heavy flow of water during wet weather, and too small to give the stagnant or slow running sewage a suitable amount of ventilation or rather oxidation which it is necessary that it should have to make the gases emanating therefrom as nearly inocuous as possible. This one particular point about the diameter of the smaller pipe sewers, has been made the subject of a very able letter, written as we understand by one of our most prominent physicians, the city to Medical Health officer. Press of other business has, we presume, prevented that official from giving the matter his immediate attention, but we hope for, some decisive action on his part at no distant date.

Without going into any technical considerations concerning the amount of friction to be overcome by sewage in, or the amount of air which should be admitted into the sewer in order to oxidize the sewerage gases, it may be said that pipe sewers are in every way preferable. They are just as durable if not more so than brick; they are cheaper, and from a sanitary point of view they are incomparably more efficient.

In the matter of cost, the experience of the Board as recently acquired shows, that practically a brick sewer costs from 25 to 40 per cent more than a pipe one. If we add to this the fact that most of the contractors who have built these small sewers have lost money on their contracts, and that the sewers built by day labor by the city itself have cost the ratepayers more than those built by contractors, it may fairly be surmised that we have not yet got at the bottom of this business, but that we may have more costly experience to acquire in the near future.

Repairs are much more easily effected in a pipe sewer than in a brick one, and at much less cost. The sewers now about to be put in on Roxborough street, on the property of Messrs. H. O'Brien and W. Nightingale, are a striking example of this. Tenders were asked for this work laid in pipe and and also for the same laid in brick. The same contractor was the lowest in both instances, his price for the pipe sewer being $840, and for the brick sewer $1,210 odd. In the face of such figures as these, the action of the Board is beyond comment.

A pipe sewer when carefully laid, is practically indestructible. Some few prejudiced or interested parties claim that pipe cannot stand the pressure which it may be subjected to, but we purpose establishing in a subsequent article, that this is an error, both from a practical and from a theoretical point of view.

The main point now to be considered, viz., that of sanitary efficiency, will be found more perfect in the pipe sewers than in the brick. The two main requisites, a free flow of the sewage and its thorough ventilation and oxidation in the sewer, are more completely carried out in the pipe than in the brick sewer. The numerous joints, and unglazed and irregular surface of the brick, make it very hard to obtain a free flow, and in time the worst ingredients of the sewage soak into the brick and form a slimy deposit on its surface. This slimy deposit increases the difficulty in the flow of water, and moreover becomes a source of perpetual danger, as every time the atmospheric pressure is lowered through any change of weather, any quantity of noxious gases arise therefrom.

Any number of figures taken from the records of the Board of Works might be cited here in confirmation of our contention, but lack of space prevents us from giving further particulars on the subject, which we purpose to treat more thoroughly at a future date.

The Stratford Building and Saving Society has been instituted. Nearly $14,000 was subscribed by the gentlemen present at one of the meetings.

DECORATION & FURNITURE

WOOD CARVING.*

By T. O. Fraenkel.

To begin, a carver must have, on an average, we will say, about fifty tools or chisels, and in order to have somewhere near a complete set, one can have two or three hundred, and still there would be no two alike, as all carving tools are ground at random or hap-hazard, but I have known of carvers executing creditable work with six, and in some cases doing better work than his neighbour with sixty. To do good, clean work it is of the utmost importance to have very sharp tools; without them the work would have the appearance of work done with a nail or hatchet. I had the pleasure of seeing, if you please, work of that kind in this city some years ago. It was at a carving school for ladies. They would toil probably two or three weeks, and in that time execute a masterpiece, with the help of the professor, and then take it home and spring it on their friends as their own handiwork. I am informed that there is a school in Cincinnati where they have more ornament than design. In spreading the tools on the bench, it is customary to lay the tools down with the points toward the operator. This is done (in laying the tools down) to prevent the point from striking the bench where there is more or less sand, which would dull the tools. In beginning a piece of carving the carver should know what position the work is to take, and to know whether it is going below or above the level of the eye. If placed above the eye it should be cut vigorously with rough and effective lines. If the work is placed low or level with the eye, it should be cut smooth and effective. We will take, for example, natural foliage conventionalized. That is to say, we spread the foliage, flowers and stems, departing somewhat from nature in order to get the panel evenly filled up. For instance, we lay out the panel, starting the main stem from the lower left-hand corner, and lay it out the best we know how; in laying out the stems they should be drawn with graceful lines, or, in other words, they should not be drawn in the panel like a string of noodle. In showing the branch from the main stem or intersection of branches, they should be drawn or cut in this manner, and in cutting the foliage it should be cut with quick and sharp curves; it can be cut so and still retain a soft appearance. For an illustration, we will take a leaf laying over a stem in this manner; it is not right to have a leaf clinging to the stem and background. I have seen that mistake made quite frequently, both in drawing and carving. A panel of that description should be laid out without the thought of a background. The shadows will take care of themselves. An experienced workman would turn that leaf up in the opposite direction, in order to avoid that effect and give the stem freedom and the leaf a light and airy appearance. If the panel is below the level of the eye, the leaves and flowers should be face up, and very little of the edge of the leaf shown, and should be undercut to give it a light appearance, the reverse if looked up to. After the design is laid out, the work is set in [a carver's term] roughly, and then grounded out, and then beginning on the surfaces roughed out to the general form striven for. Then the work is set in to the form of the leaves and the surface cut smooth; the ground is leveled as much as possible, and then stamped; it is then gone over with a stiff brush, and the panel is finished. The brush is used to produce a polish on the work, and to take off the newly cut and raw appearance of the wood and to give it the same tone as the newly surfaced margin. Sandpaper should never be used in good work, as it takes out all the life and expression in it. Carving should remain as the tools leave it. Not long ago I saw a finely designed Renaissance panel intended for a parlour mantel. The surface of the ornament was cut as good as any one could expect from a person that would cut the ground in the manner I saw it. The ground was cut rough and jabbed in every way. It looked like a scene in the Rockies, leaving out the poetry, and not a ghost of a show for the delicate lines or shadows. I think it is wrong to cut the ground in this way; it may possibly do for some Byzantine work where there is little or no ground shown, but I would prefer to see the ground cut on a general level. In the outline form of the leaf, it should be cut bold and clear with little line or vein work on the surface, which jumble the form and outline. Very often you find, where the form of the foliage is entirely neglected and the surface of the leaves so cut up with innumerable lines and stems, that to the eye the form of the leaf is completely destroyed. This, I think, is the fault with some of our Byzantine work. I maintain it should be cut with a soft effect, and it can be cut so and not look limp and lifeless. The number of lines produce a dark tint. Thus you have a mass of shade with innumerable small shadows, but no parts broad enough to receive the necessary amount of light. In our city of smoke, and fog now and then, and very little sunlight, where materials are blackened with smoke and dust, carving should be cut clear, bold and distinct. In carving, the position of ornament should be treated according to the position it is to take, and one should be careful in its use. If out of place it would not look well in a piece of furniture, no matter how well it may be cut. On the other hand, ornament in its proper place should be cut well. Better leave it off entirely if you cannot have it good. When you have a sunk panel with a small margin, always cut the ornament out of the solid, and call for it on the details. In modern cabinet work it is often glued on to save expense. Work of that kind is not exactly objectionable, for good glued work will hold on as well as the solid, but there is always a doubt whether it is glued well. In some cases it is not practical to cut it out of the solid, owing to the difficulty in getting the ground level with the outer surface or margin.

In studying ornament I would advise working from photo-gravure plates. Printed ornament does not fill the bill, as it does not show the delicate effects on the surface of the foliage. I would suggest Hauptman's Italian Renaissance, as these plates are taken from casts of original models. If one can draw Renaissance it is not difficult to work in any style that presents itself. Keep on with your pen and ink and pencil and water colour, study and observe nature and everything pertaining to art; do not imagine you are not built that way, but go right in with a will and in time you will surprise yourself.

* Abstract of paper read before the Chicago Architectural Sketch Club.

TREATMENT OF CEILINGS.

The ceiling is perhaps the part of an apartment that calls most loudly for decoration, says the London *Architect*, and no architectural feature is more susceptible to it, where it might be introduced with more effect, or give more pleasure to the inmate; yet this feature we invariably neglect. We naturally look up for beauty; however lovely the earth, the sky, both night and day, presents us with greater charms; we are cheered in our outdoor hours by its everchanging picture, for which a flat white plane is a miserable substitute in our indoor life. To houses of the very highest class these remarks will apply, for it is a feature which has not had its due proportion of attention, in point of decoration, in any class of buildings, from the cottage to the palace. There certainly can be no more fitting place for decoration in the habitation of a being created upright. Can inconsistency be more extreme than that presented by thousands of apartments, where a rich elaborately decorated carpet is under the feet, and a plain, dead, flat ceiling above? In the interior of Arabian buildings the ornaments almost invariably become richer, more delicate and minute, as their height from the floor increases, and the most exquisite productions of the artist are lavished on the ceiling. With respect to the form, the curve is at all times preferable to the flat, though the latter by various means is capable of great beauty also. No very great additional height is required in order to have a curved ceiling, as, whether coved or segmental, the rise need not be very great. For rooms of great pretension there is no form more noble and natural than the vault and dome, particularly the latter, whether hemispherical or segmental, as far as it suits the plan or can be adopted by pendentives or otherwise. It is the best substitute for the blue vault of the sky, the starry concave of the heavens. It was a fine idea of the builders of the mosque of St. Sophia at Constantinople — a conception in advance of ours — to make the curve of its dome so flat that it should seem to correspond with that of the sky, and be a portion of the firmament. We want an enlarged, improved, enriched, and at the same time inexpensive system of interior decoration, for domestic and ecclesiastical, and other buildings, in our anglo-classic style.

For churches, collegiate and other buildings in the pointed style, we have examples in our cathedrals and other buildings, which prove that the genius of interior decoration was once among us, as well as the taste to employ it. At Henry the Seventh and King's College Chapels; the Oratory at Beauchamp Chapel; the Temple Church; Wolsey's Hall, Hampton Court; Christ Church Hall, Oxford; Westminster Hall, and others, we have ceilings and roofs that might vie with any that Europe could show. For assistance in evolving a system of Classic decorations we might look to some parts of the Continent. Exterior decoration there has sometimes probably been carried too far, a few Continental edifices exhibiting ornaments so minute and fragile as to seem at least unfit for exposure to the weather in any climate. But this could not be said of interiors. The Moorish or Morisco-Spanish architecture suggests to us what richness might be produced by very simple means; their icicle pendants, inlays, and casings, and purely geometrical and imaginative ornaments, are very effective, and with them they often produce greater results than we, with all nature to imitate, have attained to. But the art of interior decoration was better understood and more successfully practiced in the great age of modern art in Italy, and indeed throughout the Middle Ages than at present in any country. We never had any decoration to be compared with the mural and fresco paintings of the Italians, and there is probability in the supposition that their system was obtained from the remains of the ancients, which time or violence has not spared to us. Beside the curved and richly emblazoned ceilings produced by the Italians, and the pictorial embellishment of their walls, ours might symbolize poverty itself. The ceilings of the principal apartments of a Roman, Genoese, Venetian, or Florentine palace were considered as most important features, and on their design and execution the highest talent was employed. In ecclesiastical buildings the contrast with ours would be still greater. Whilst the interior of the churches of Italy glow with every rich hue of the marble quarry, and are virtually galleries of art, what is the aspect of ours?

ELECTRICAL PLUMBERS.

The *Engineering Record* says: "A new class of craftsmen have sprung up all over the country within the past six or seven years who bid fair to become scientific artisans, in their line, on account of the practical knowledge necessary in the business.

"They are known as the 'electrical' or 'special' plumbers. Their duties are to weld the joints of subway cables, and to do this successfully they must not only be first-class plumbers, but intelligent workmen, who can learn something about electricity and the necessity of perfect insulation of circuits. Few people who have watched the placing of underground cables can appreciate the important part the electrical plumber plays in the matter. Each year he becomes better known, and, it is safe to say, he will continue to increase in numbers and in prosperity. The salary of an electrical plumber is about $5 a day.

Letters patent are being sought at Ottawa incorporating the National Construction Co., of Yarmouth, N. S., for the purpose of acquiring railways, tramways, wharves, etc., and also for the construction of houses and other buildings. The capital is to be $5,000,000.

We are in receipt of the first number of *The Builders' Exchange*, which is henceforth to be published monthly in Boston as the official journal of the National Association of Builders of the United States. The editor is Mr. W. H. Sayward, the capable Secretary of the above Association, to whom we extend the right hand of journalistic fellowship.

SANITARY ENGINEERING

SUBURBAN SANITATION.

Quite often in the designing of suburban residences, where there is no proper sewerage system, say G. C. Kaufman in the *Building Advertiser*, the architect meets with a very vexing problem, that of disposing of the sewage and rain so as to attain a good standard of sanitation; and again, to have the sewerage construction as cheap and practicable as possible.

The first matter to be noted is the fall of the land surrounding the residence to be constructed and the character of the soil. The soil should slope from all sides of the foundation so as to make fall enough for the rainfall to drain from the walls. In climates where the rainfall is very large for a given time, a method more effective than the foregoing should be employed —one that is more direct in its action, so as to carry away from the foundations the copious flow of surface water. The method most practicable is to dig trenches in the direction of the fall of the soil, about eighteen inches wide, and not more than two feet below the floor line of the cellar or basement. The trenches should not be less than twenty feet in length and running or radiating with not more than twenty feet apart at their sources.

Fill the trenches to a depth of two feet with coarse gravel and broken stone; fill the remainder of the trench with soil well packed down. By doing this you have a complete system of channels leading from the house, and all surface water which sinks downward will reach these channels and be conducted from the foundation walls and soil surrounding the residence.

This should be an important matter to the owner and should not be looked upon as an unnecessary expense, but on the contrary as one of the main features for health and comfort.

There can be noticed in many basements and cellars a blackening of the first-story beams with incipient decay, or a chilly atmosphere with a peculiar and penetrating smell, especially after rains. Such are the houses where people die of consumption and other lung diseases; or the churches that you enter with a sudden depressive feeling and leave with a cold or headache. There is an abundance of such homes and buildings where the sickness of the inmates is directly or indirectly caused by the gross negligence of the owners in this one important feature.

Dampness about the house should at all times be avoided, as it is one of the chief constituents in the growth of bacteria and other unhealthful and poisonous germs of disease. Let the architect in all cases arrange the drainage as near to perfection as possible and refuse to allow any but absolute security against water or dampness within the foundation walls.

There are many other methods of drainage which are more costly and complicated, but which serve to the same end. By this simple method the rainfall sinks to the gravel in the trenches and finds an easy escape, thereby leaving the cellar and foundation dry and healthful.

Having mentioned the chief features and advantages of the proper drainage of the area in question one would naturally turn to the house problem—the disposal of sewage.

There are a great many systems devised and advocated. Some are very costly, while others are defective in some measure. The best plan, and one which has been adopted both on a small and large scale, is the surface irrigation of the sewage; that is, the removing and disposing of it by means of pipes, so laid as to leave the matter in the undersurface. The sun, soil and air are the principles of action in this plan, together with a series of receiving tanks which perform the operations of settling and intermittent flushing.

The flushing tank should be as simple as possible and not have a complicated mass of pipes and mechanism, which is liable to become rusted or choked up with matter. The best and most effective design for a flushing arrangement is a series of these tanks—the receiving or settling tank, the flushing tank and a final discharge tank, which contains the siphon connect-

ing with the flushing tank. The receiving tank should be made large enough to contain about one-third of the probable discharge of sewage for one day; that is, up to the overflow to the flushing tank, which should be about two-thirds up the side of the tank and have an inlet extend downward below the water line. The same direction applies to the house discharge to the receiving tank.

As the sewage rises up in the receiver to the overflow it then discharges in the flushing tank as it comes in access in the receiver. The flush tank is connected then at the base with the discharge tank, by means of a siphon, the neck of which rises up to the mean water line of the receiver and flush tank As soon as the siphon is filled to the mean level the sewage gradually drips over until a siphon is produced, and then the sewage rushes out in the discharge tank and to the main pipe and its various branches, thereby causing a complete evacuation of the flush tank. This process is again brought about as soon as the flush tank is filled again. By constructing the three tanks to suit the discharge per diem, one can have a thorough flushing of the system three or more times per day.

The main pipe leading from the discharge tank should have tight joints, but its branches should be two inch terra-cotta tile laid with open joints, so as to allow the sewage to sink away as it passes through the different branches.

The tile should be laid not less than twelve inches below the surface, and have a fall of not less than one foot in fifty. The different branches should be laid about five feet apart.

THE SIZE OF REGISTER TO USE.

REGARDING the sizes of registers and pipes for different sized rooms, the following is taken from the catalogue of a prominent furnace company: In public halls or buildings where but a single register is required, take the hot air pipes from the top of the furnace and use register without valves. The size of pipes and registers requisite for the successful operation of any furnace is a matter requiring the best judgment, and should be determined by the size, position, and distance from the furnace of the spaces to be heated and cannot be governed by any fixed rule. We usually recommend for rooms of ordinary height as follows:

Room on first floor, 12 x 14 feet, should have 8 inch pipe with 8 x 12 register.

Room on first floor, 12 x 18 feet, should have 9-inch pipe with 9 x 12 register.

Room on first floor, 16 x 20 feet, should have 10-inch pipe with 10 x 14 register.

Room on second floor, 8 x 12 feet, should have 7-inch pipe with 8 x 10 register.

Room on second floor, 10 x 16 feet, should have 8-inch pipe with 9 x 12 register.

Room on second floor, 12 x 16 feet, should have 9-inch pipe with 10 x 14 register. Medium size halls should have 10-inch pipe with 10 x 14 register. Large size halls should have 12-inch pipe with 12 x 15 register.

When oval or flat pipes are built in the walls of an ordinary three or four story city house, the basement room and parlors should have independent pipes; second, third and fourth story rooms can be warmed by a single line of pipe reduced in size over each register, viz:

A house 18 or 20 x 45 or 50 should have a separate pipe, 4 x 16 to basement.

A house 18 or 20 x 45 or 50 should have a separate pipe, 4 x 16 to each parlor.

A house 18 or 20 x 45 or 50 should have one line, 4 x 18 to to second story, reduced to 4 x 14 for third story, reduced to 4 x 9 for fourth story.

A house, three storys, 20 x 45 or 50 should have one line, 4 x 16 to second story, reduced to 4 x 9 for third story.

The above sizes to be varied according to the size of house and general division of the interior space.

4 x 24 pipe in the wall should have 12-inch pipe connected with furnace.

4 x 20 pipe in the wall should have 10-inch pipe connected with furnace.

MANUFACTURES AND MATERIALS

ENDURANCE OF WOOD POSTS IN FIRES.

THE contents of a building, says E. M. Shaw, in the *Architect*, (London,) have undoubtedly much to do with its safety or danger, but in estimating the whole risk, the materials of which the building is constructed must never be put out of consideration. Every building cannot be erected with brick column and groined arches, but there is a vast range between these and the miserable cast iron posts too commonly to be seen, many of which have been put in without having been tested for strength even at the ordinary temperature of the atmosphere, much less at that of a fire. The following illustration may be given of a fact well-known to all firemen of experience, but seldom proved to demonstration for those not specially interested.

A fire occurred in a warehouse of enormous proportions and raged with great fury for five hours, at the end of which time it was extinguished, and a very large proportion of the building and its contents saved. The warehouse was constructed of brick walls; it had wooden floors supported on wooden beams, which in their turn were carried on wooden story posts about 12 inches thick, and, although serious damage was done, not one portion of the heavy wood-work was destroyed. After the fire, the proprietors allowed the chief of the fire brigade to remove one of the story posts, with a section of the beams and other parts surrounding it above and below.

This post had been subjected to the full action of the fire during the whole of its duration, as already mentioned, or, making full allowance for everything, including the delay of the fire attacking the particular spot on which it stood, and the time at which the cooling process commenced, certainly not less than four and a half hours. As large quantities of water had been used, and it was probable that everything had been saturated, the wood was carefully dried before a strong fire until not a trace of moisture remained in it. It was then set on end in an open yard, exactly as it had stood in the warehouse, with the pedestal underneath, the cap above, and the beam across the cap, more than a ton of shavings, light wood and heavy wood were placed around it, and after the whole heap was saturated with petroleum, a light was applied to it, and after this, large quantities of petroleum and turpentine were pumped on it. At the end of two and a half hours the post, beam and other parts were withdrawn from the fire, and within a few minutes from the time they were withdrawn they ceased to burn. A few feet were then sawn off horizontally, at that part which had suffered most from the flames, and afterward the same piece was split longitudinally with steel wedges, in order to examine its condition.

The post was of pitch pine, about the most inflammable wood known, and yet after exposure for seven hours to fire, the fury of which could not be exceeded except in blast furnaces, it contained within a quantity of perfectly uninjured and apparently fresh wood, probably capable of supporting the whole weight which the original post was designed to carry. Immediately after the saw cut, and again after the cleaving with steel wedges, the centre was carefully examined, and found to be just perceptibly warm to the touch, but nothing more, thus proving that the fibre, in which the strength lay, was quite uninjured.

PUBLICATIONS.

OUR thanks are due to Messrs. Merchant & Co., of Philadelphia, for a series of handsome photogravure plates showing perspective and sectional views of the celebrated Eiffel tower at Paris, made from photographs taken during Mr. Merchant's recent visit to the Paris Exposition.

We have received from the publisher, Mr. M. T. Richardson, New York, a copy of his book entitled "Practical Blacksmithing." Notwithstanding the fact that every village and hamlet in the civilized world contains a blacksmith, and has ever since mankind learned the various uses of iron and steel, nobody has ever written a book on the art of blacksmithing. A chapter has now and then appeared in works on mechanics, but these comprise the extent of the world's printed knowledge of an art without which mankind would relapse into barbarism. The present work is a compilation of practical articles which have appeared during the last ten years in the columns of *The Blacksmith and Wheelwright*. Ancient blacksmithing and primitive tools are considered briefly, and then plans of shops, chimney building, forges, and descriptions of a great variety of tools are given. The illustrations are numerous, and the book would appear to be of great value to all workers of iron.

CONTRACTS

CONTRACTS AWARDED.

GALT, ONT.—The Hospital Trust has awarded the contract for building the hospital to Mr. Robert Middlemiss, for the sum of $5,938.

SHELBURNE, ONT.—Mr. R. Blain, of Brampton, has secured the contract for supplying and laying the pipes, putting in hydrants, etc., for the waterworks.

PRESTON, ONT.—Mr. Walder has let the contract for his large hotel and sanitarium to Mr. Brown, of Berlin, for the stone and brick work, and plastering, and to Mr. A. McAuslan, Galt, for the carpentering and woodwork.

We desire to correct an error which appeared in connection with the publication of particulars regarding Mr. Beck's house at Penetanguishene, in the CANADIAN ARCHITECT AND BUILDER for August. It was there stated that the carpenter and joiner work was done by Messrs. Bryan Bros. We have since been informed that the firm mentioned had nothing whatever to do with the building, but that the wood-work was done by Mr. Peter C. Hunser, jr., of Collingwood, to whom all credit for excellence of workmanship is due.

CONTRACTS OPEN.

NAPANEE, ONT.—A system of Waterworks is to be put in.

SHAWVILLE, ONT.—A Baptist Church is to be erected here.

LEAMINGTON, ONT.—The Methodists will build a $12,000 church.

MAGOG, QUE.—It is proposed to erect a new town hall and market buildings.

MIAMI, MAN.—The Methodists and Presbyterians have each decided to build a church here.

MONTREAL, QUE.—An appropriation of $4,000 has been made for the enlargement of St. James market.

LONDON, ONT.—The Public School Board has decided to expend $10,000 in building an addition to the Collegiate Institute.

VANCOUVER, B. C.—Mr. S. C. Barris, architect, has prepared plans for a $15,000 stone residence to be erected for Dr. Hamington at his farm at Aldermere.

GALT, ONT.—The Board of Trade will ask the Council to submit to the ratepayers the question of constructing a system of water-works at a cost of $100,000.

HAMILTON, ONT.—The Sisters of St. Joseph have purchased Bishop Dowlings residence on John St., and will remodel it to serve the purposes of a hospital.

KINGSTON, ONT.—It is proposed to build a double house for the accommodation of the Church of England Bishop and the rector of St. George's Church. The cost is estimated at $12,000.

CRAIGIELEE, MAN.—The Presbyterians propose building a church at an early date.

BEAVERTON, ONT.—It is reported that the G. T. R. intend building a new station.

OWEN SOUND, ONT.—The Secretary of the Public Works Department at Ottawa, will receive tenders until the 18th inst., for proposed improvements to be made to the harbor at this port. For particulars see advertisement in this paper.

OTTAWA, ONT.—Plans have been prepared in the office of the Chief Architect of the Militia Department for officers' quarters for "C" Battery at Victoria, B. C. Tenders for the work of construction will be invited by the Public Works Department.

GALT, ONT.—The tenders sent in for the erection of the new hospital being in excess of the funds at the disposal of the directors, the architect has been instructed to amend the plans with a view to reducing the cost, and new tenders will be called for.

WOODSTOCK, N. B.—Plans and specifications for a new stand-pipe have been prepared. It will be 35 feet in diameter by 40 feet high, and may be erected this fall. In connection with its erection 1,400 ft. of 10-inch pipe will be required, with the necessary valves, etc.

TORONTO, ONT.—The following building permits have been granted by the City Commissioner since the date of our last issue: Chas. Furringer, pair s. d. 3 storey brick dwellings, Homeward Ave., cost $3,250; J. C. Hurst, pair s. d. 2 story and attic brick dwellings, Berkley, near Gerrard St., cost $5,000; J. J. Follett, det. 2 storey and attic brick dwelling, corner Bloor and Huntley Sts., cost $10,000; A. Coleman, det. 2 story and attic brick dwelling, 49 Alexander St., cost $3,700; Mr. Creighton, pair 2 story and attic brick dwellings, Dunn Ave., cost $5,000; Dr. W. T. Aikins, det. 2 story and attic brick dwellings, Jarvis and Gerrard Sts., cost $8,000; Dr. E. J. Barrick, alterations and additions dwelling corner College and Markham Sts., cost $1,000; W. W. Mason, 2 pair s. d. and one det. 2 story and attic brick dwellings, Melbourne and Gwynne Ave., cost $15,000; Toronto Incandescent Light Co., E. L. Station, Terauley St., cost $20,000; Hon. S. C. Wood, alterations to dwelling, Avenue road, cost $2,000; A. Smith, 4 story brick veterinary college, Temperance St., cost $16,000; E. S. Rickford, additions at 36 Front St., and 27 Wellington St., cost $7,000; S. F. McKinnon, 5 story brick and stone bank and offices, Yonge and Colborne Sts., cost $6,000; P. Lankin, two 4 story brick warehouses, Bay and Front Sts., cost $40,000. A. W. Godson, pair s. d. 2 story and attic brick dwellings, Richmond St., west of Duncan St., cost $6,300; Mrs. Kerr, 2 pair s. d. 2 story and attic brick dwellings, Jarvis St., north of Queen, cost $6,000; John Taylor, 3 story brick cigar factory, Richmond near Jarvis St., cost $4,000; Mrs. Buchanan, 2 story and attic detached brick dwelling, George St., south of Lowther Ave., cost $11,500.

PERSONAL.

Mr. Thomas Eddy, of the Toronto Stone Co., and a well known and highly respected contractor, died very suddenly while attending a meeting to consider the erection of a new Methodist church at Kingsville, Ont.

THE PERMEABILITY OF CEMENTS AND MORTARS.

THE question of permeability of cements and mortars has been treated of by the Board of Experts appointed to report on the Washington Aqueduct Tunnel. In their report it is stated, says *Engineering*, that even if the brick lining of the tunnel were carefully made and backed, still leakage could not be prevented, as bricks are themselves pervious under somewhat moderate heads. In some experiments made by Mr. Francis last year, about 13.8 gallons of water per square foot of surface passed through a thickness of nearly 16 inches cement in twenty-four hours, under a pressure of 77 pounds per square inch. Mr. Stauffer, another engineer, constructed a bulkhead of brick-work in cement, in the Dorchester Bay Tunnel, which measures 10 feet by 10 feet, under a pressure of 72 £ per square inch, water percolated through at the rate of 96,000 gallons per day. Experience on the Boston main drainage work showed that it was not practicable to build a brick bulkhead which should be tight for pressures exceeding 64 £ per square inch, and at the Croton Reservoir water under 36 feet head water was found to percolate through 26 inches of brick work and four feet of concrete. In some experiments made by the Board of Experts themselves, a good fair specimen brick was exposed to a pressure of 80 £ per square inch on one of its faces, and under these conditions 23.4 cubic inches of water passed though the brick in the first hour, and 21.3 in the second hour. The mean of these figures is equivalent to 1.4 gallons per square foot of surface per hour. In the case of another brick under the same pressure 46.8 cubic inches passed through in one hour. Blocks of cement mortar allowed to set for twenty-four hours in air and afterwards hardened for five weeks in water were also tested. Under 80 £ pressure, water passed through these at the rate of 36.4 gallons of water per hour. The above figures have been reduced to English gallons of 10 £ of water.

What is said to be the largest block of granite ever quarried in New Brunswick was taken from the quarry of the New Brunswick Red Granite Company, near St. George, a few days ago. It weighed 1,200 tons. The mass was moved 20 feet from the solid rock.

The Canadian Office and School Furniture Company has been incorporated, and succeeds the well known firm of W. Stahlschmidt & Co., manufacturers of office, school and lodge furniture at Preston, Ont. The headquarters of the new Company will be at 24 Front St. west, Toronto.

Mr. H. D. Bush upon retiring from the position of superintendant of the Dominion Bridge Co. at Lachine, Que., was presented on behalf of the 300 employees of the works with a handsome gold watch. Mr. Bush is about to make a trip to Europe.

The beautiful new hotel at Childwold, in the Adriondacks, owned by Mr. Addison Child, is attracting great attention. It is finished completely with Creosote stains, the colors being soft and harmonious.

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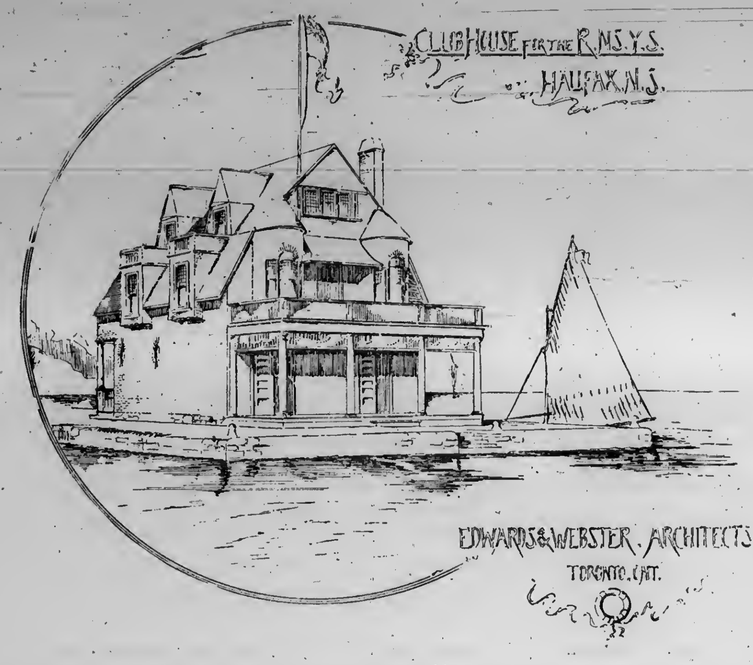

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SUBSCRIPTIONS.

The CANADIAN ARCHITECT AND BUILDER will be mailed to any address in Canada or the United States for $2.00 per year. The price to subscribers in foreign countries, is $2.50. Subscriptions are payable in advance. The paper will be discontinued at expiration of term paid for, if so stipulated by the subscriber; but where no such understanding exists, it will be continued until instructions to discontinue are received and all arrearages are paid.

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EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The Ontario Association of Architects has appointed the "Canadian Architect and Builder" its official paper.

FOR the construction of a business building of medium cost, a Toronto architect received the other day tenders from fifty contractors. This serves to show the extent to which competition exists in the building trade, and in a measure accounts for the unremunerative condition of the business.

WHILE many Toronto contractors find a difficulty in getting enough work to do, a few seem to have secured more city contracts than they can get through with, in the time specified. The frequent complaints of citizens concerning delays in the execution of public works, has led the Mayor to make a personal investigation.

STONE is coming largely into use in Toronto of late, and the demand is certain to increase very rapidly. Many valuable stone quarries which have hitherto lain idle and unprofitable on the owners' hands, should in the near future prove sources of much profit. The quarries of the lower provinces are beginning to find a Canadian market for stone which formerly was sold almost exclusively in the United States.

EFFORTS are being made in Winnipeg to induce the Dominion Government to remove all obstructions from the channel of the Red River, and deepen the same so as to permit of Winnipeg being made the headquarters for Lake Winnipeg navigation. It is estimated that the modest sum of $13,000 would cover the cost of the improvement. If this be so, we should suppose that if the Government will not carry out the work, the city might very well afford to do so, in view of the commercial benefits which would be likely to accrue therefrom.

THERE are indications pointing to the city of Toronto as the scene of extensive building operations next year. One of these is the appointment of a committee of prominent citizens, to report a well-considered scheme for the erection of a commodious fire-proof hotel. It is designed that the proposed hotel shall be first-class in all its appointments. Its cost is placed at upwards of half a million dollars. There seems to be little doubt that a company with a capital of $1,000,000 will be formed to carry out the project.

WE think it would tend to the development of the Canadian Society of Civil Engineers and widen the interest in its work, if local sections or associations were formed in the principal cities throughout the Dominion. At present all meetings of the association are held at headquarters in Montreal, and are consequently inaccessible to a large majority of the members throughout the country. We learn that the American Society of Civil Engineers is about to take such a step, and the proposed new departure is meeting with much favor.

MR. Erastus Wiman, writing on "The Mercantile Agency and its Relation to Business," says the agencies have grown with the requirements and extension of trade, the result having been to create and crystallize a mass of information as essential to the safe conduct of business as the insurance company, the railway and other trade facilities. This is exactly what we might expect to hear from the head of a mercantile agency. Notwithstanding, we have reasons for believing that the information supplied through these agencies is not always of the character which business men can depend upon, and that in some cases at least, ordinary diligence is not observed to make it so.

THE Montreal Road Committee is out of funds, and what is worse, has exceeded the appropriation placed at its disposal by no less a sum than $43,000. Notwithstanding the large amount expended, the citizens are clamoring for improvements and repairs. The City Surveyor charges his deputy with the blame of extravagant expenditure. The Road Committee of next year will be expected to get along without the $43,000 over-expended by their predecessors, and that their pathway will not be strewn with flowers may easily be gathered from the *Gazette's* remark, that "if next year's streets are $43,000 worse than this year's, the aldermen are likely to hear from interested citizens." In other words the Road Committee of next year must be prepared to make bricks without straw.

AN unintelligent or careless workman may involve his employer in heavy loss, and is pretty certain in one way or another to prove himself a source of annoyance as well. An instance of this was brought to our notice recently by a perusal of the proceedings of one of the Toronto courts. Action was brought against a firm of master plumbers to recover $200 damages for injury to children and property by an explosion caused through the carelessness of one of their employees while repairing water pipes. The jury awarded the plaintiff damages to the

amount of $55.50. To this sum must be added the loss of a customer and the injury to the employer's business which a customer so treated and the publication by the daily press of the names of the defendants to the suit, are likely to entail. It pays to employ only competent, careful workmen.

IT is estimated that one-tenth of the gas supplied for illuminating purposes in the city of New York escapes through imperfect joints in the gas mains. This waste product finds its way into sewers, cellars, electric conduits, etc., leading to explosions and imperilling life and property. The city authorities have determined to pass an ordinance regulating the manner in which gas mains shall be laid and joints made. As the result of enquiries we find that little or no trouble is experienced in Toronto from this cause, the gas mains being well and carefully laid, and the company prompt to remedy leaks when notified that they exist. There seems to be room for improvement in one direction, however. The City Engineer should be furnished plans locating all the gas mains and services. At the present time the city's engineers have no idea in what part of the streets gas mains are laid.

DURING the winter of 1888, the architectural students of Toronto formed themselves into an association for mutual improvement in the study of their profession. Meetings were held weekly in the Canadian Institute building. In response to the invitation of the association, a number of valuable papers were read, addresses by architects and master builders given, and discussions held thereon. These all contributed materially to the advancement of the students who were so fortunate as to be in attendance at the meeting. Probably not more than one-quarter of the students of the city, however, were ever present. The majority of these, more especially the juniors, seemed to prefer to spend their evenings at some place of amusement. This had a discouraging effect on the leaders in the association, and as a result, no meetings were held last winter. We have many times heard the wish expressed, on the part of the students, that the association would, with the return of the winter season, reorganize and resume its work. We direct attention to the subject at this time in the hope that the students most interested will at once take action with that object.

IN reply to our request for information concerning the cause of the recent water famine at London, Ont., and what steps are to be taken to increase the supply, Mr. T. H. Tracy, City Engineer, writes as follows: "The consumption has increased so much (we now having 5,000 services connected) that in the hot dry weather, it exceeds the supply by almost 100,000 gallons per day, the supply being at present a trifle over 2,000,000 gallons per day of 24 hours. In the immediate neighborhood are additional springs of a capacity of almost 1,500,000 gallons per day, which the City Council have recommended the water commissioners to expropriate so as to increase the supply to 500,000 per day, which will be ample for many years to come. There are no difficulties in the way, and it is only a question of the expenditure of say $25,000 to bring in the additional water. The water commissioners have directed their engineer and superintendent (myself), to make a report on the capacity of these springs, and any other information he may deem necessary. I have no doubt the additional water will be secured before it will again be required. In the meantime, by the assistance of the G. T. R., who pumped a portion of their supply from the river, we have the reservoir again full to the normal level, and do not anticipate any more shortage this season."

A CAREFUL estimate of the freight and passenger elevators in operation in the city of Toronto, places the number of them at about 400. By far the largest proportion are freight elevators in use in warehouses, factories, stores, etc. A number of large office buildings are now in course of erection all of which will be equipped with elevators. This will make it necessary in order to secure and retain tenants, to place elevators in many business buildings which at present are without them. Thus it is likely that the number of elevators in Toronto will in the course of a few years be largely increased. In view of this, the question arises: is it not advisable that there should be instituted a system of elevator inspection, such as has been found necessary in New York and other American cities. Fortunately the number of accidents in connection with elevators, have been comparatively few in Toronto thus far. A number have occurred, however, and several lives have been lost in consequence. In addition to the necessity there is to see that elevators are properly guarded, it is well known that the strands of wire ropes subject to the constant tension imposed by elevator service, become in time disintegrated Accordingly theser opes require to be examined, and at intervals renewed, in default of which accidents with attendant loss of life, are almost certain to occur.

A SERIES of mass meetings of carpenters has been arranged to be held in Toronto, at which addresses are to be delivered showing the advantages of organization, and urging that steps be taken to secure perfect union among the carpenters of the city. At the first of these meetings, a speaker stated that by means of its perfect organization the Builders Laborers' Union of Toronto had secured for its members double the rate of wages formerly paid to them. In fact some of them were receiving higher wages than skilled carpenters. Canadian master builders should find here a lesson for themselves. Sooner or later they will come to realize that there is power in organization, and also that until they meet organization by organization, they will continue to be placed at a disadvantage in their attempts to withstand the ofttimes unreasonable demands of the labor unions. The fact that the wages of the builders' laborers has doubled in a short period of time, may be understood to mean that undue advantage has been taken of the contractors. It would be difficult to prove that the builders laborers were formerly paid only half what they were worth, or that the contractor's profits have increased to such an extent as to justify him in complying with the demands of his workmen. On the contrary, the ever increasing keenness of competition has greatly reduced the margin of profit to the contractor, and lessened his ability to pay higher wages. By means of a powerful organization the workmen have succeeded in extorting a rate of wages which in many cases eats up what little profit remains to the master builder from his contract, keeps his family in poverty and drives him to bankruptcy. These are facts with which many of our readers are familiar. The fault as well as the remedy rests with the master builders themselves. Unlike employers of labor in almost every other branch of industry, they have no organization for mutual protection. As a consequence they fall an easy prey to the avariciousness of powerful labor organizations, the members of which so frequently call upon them to "stand and deliver."

THE WOODSTOCK COMPETITION.

"CANADIAN architects were invited to compete for the honor of furnishing the plans for a court house at Woodstock, Ont. The appropriation provided for a $60,000 structure. Yet notwithstanding this, the plans selected were subsequently found to involve an expenditure of at least $100,000. It would seem from this that architects are sometimes decidedly ignorant of even the approximate cost of constructing a building after their own working plans."—*Building Trades Journal.*

Our St. Louis contemporary evidently writes without an understanding of all the circumstances connected with the Woodstock competition. When the competition was first announced we pointed out that a building containing the required amount of space and accomodation must cost at the very least about $100,000. This fact was known to every competing architect. It was a foregone conclusion on the part of the architects that a building fulfilling the requirements could not be erected at a cost even approximating to $60,000. The error in judgment which our contemporary attributes to the architects in this case clearly belongs to the Building Committee who asked the architects to perform an impossibility. Our contemporary is, however, correct in saying that in these days of wild estimating on the part of contractors, an architect's ideas of cost are sometimes far removed from the facts as they develop. It is a matter of

surprise to an architect to get a bid ten, twenty and sometimes thirty per cent. below the highest offered, which may have been about the figure at which he thought the work could be completed. The architect is again as much disturbed in his reasoning when bids are put in far in excess of his original estimate of the cost of the work. As there seems to be more or less guess work used in the process of figuring by contractors, the architect's only recourse is to make the best guess he can and trust to luck to have it approximated by the lowest and best bidder.

THE RELATION OF AN ARCHITECT TOWARDS HIS CLIENT.

By G. F. STALKER.

AN architect's duties, and the position he occupies are, as compared with the duties and position of other professional men, somewhat ill-understood. Everybody knows that a doctor has to give his whole attention to his patient, and that a lawyer has to attend solely to the interests of his client. Any divergence from these well-understood lines of practice would bring discredit upon either doctor or lawyer. If any friction should occur in the prosecution of their professional duties, it is usually because the patient will not carry out the instructions of his doctor, or because the client assumes a greater knowledge of the law than his legal adviser. But in either of these cases there is no third party to interpose any objection to this or that course of action.

In this respect the architect is placed in a different, and less agreeable position. It is true he is engaged by his client to do certain work, and by his client he is paid for doing it; and so far a position of servitude is imposed upon him. But in carrying out his client's business a third party has to be dealt with, who, in the course of a few hours after the commencement of building operations, has vested interests in the matter which must be considered. And at this stage of proceedings the architect, like Desdemona, perceives "a divided duty"—a divided duty, however, which can be faithfully performed towards both parties, provided they all understand the relation in which they stand to one another.

It will therefore be of no small advantage if the relationship of the three parties is clearly defined. As the architect is as it were the central figure in the trio, it will best serve this purpose if in this paper a statement is given of the relation in which an architect stands towards his client, and, in a subsequent paper, the relation in which an architect stands towards the contractor. By this means the mutual relationship of the three parties will be better understood.

As a rule when a client seeks the advice and services of an architect, he has what may be termed a clearly indefinite idea of his own requirements. And it is here, at the very outset, that an architect has to call into activity all the tact and diplomacy with which he is gifted. By cross-examination, careful angling, leading suggestions, any process in fact which the circumstances may require, he must sift his client so as to ascertain his purposes in regard to the building he proposes to erect. This done, he must give them shape, and in doing so he must be guided more by his own knowledge and experience than by any suggestions his client may have given him. These in many instances will be found to be altogether impracticable, or entirely contrary to the general arrangements intended to be carried out. At the same time there are few men who have not some peculiarity, "fads" if you will, which they consider almost essential to their comfort, or to the purpose of their building. The architect must of course give such emphasis and force to any particular leanings of his client as the case may require. But he must carefully guard against what he knows to be extravagances or excresences. The probability is that the client wants more for his contemplated outlay than it is possible to give him; and it will only result in disappointment and vexation if the architect does not from the first take hold of the reins in the matter of expenditure. And this is a point on which architects seldom have justice done them. The opinion prevails that, because an architect's remuneration for his services is based on the cost of the building, it is to his interest to run up expenses. That looks feasible and natural. But does it not seem more feasible and more natural, that he will exercise all his knowledge of the science of construction and art of architecture to accomplish the greatest results, with the least possible outlay? It must surely be evident to every man that this is at once the most honorable, and the most profitable course for an architect to pursue.

Having then, by illustrations and sketches, established a mutual understanding between himself and his client, as to the requirements of the latter, the architect must now prepare the contract drawings. This, indeed, forms the most important part of his work, for with the specifications, the contract drawings constitute the common standing ground to be occupied by the client, architect and contractor. They set forth what the client is to receive, and what the contractor is to give for a stipulated sum of money, and what the architect is to require for his client at the hands of the contractor. It is therefore of the utmost importance that they should be prepared with the greatest care, and that in developing the ideas interchanged in the earlier stages of the proceedings, the limits of size and cost should not be exceeded. Up to this point the architect has been acting wholly in his client's interests, as indeed he will continue to do until the building is completed; but, hitherto, without any disturbance to their mutual harmony arising by the presence of a third party. The contractor is still unknown to him, and a stranger. But when the contract is signed and operations have commenced, then the contractor becomes an important factor in all subsequent arrangements. It is then that the architect occupies very much the same position as a judge. He must act with the most scrupulous impartiality between his client and the contractor. On his client's behalf he must guard against any work being done or material being used in his building that is of a quality inferior to what has been specified and contracted for. He must see that the design and specifications that have been approved and signed in good faith, are in as good faith carried out. And if, in the progress of the building, anything should occur to him that will beneficially or economically affect it, it will be his duty to consult with and advise his client thereupon. In short, he must see that his client gets, what he may reasonably have been expected to get, both of the contractor's labor, material and skill, and of his own time, experience and ability, for the amount of money he has agreed to pay for them. But, on the other hand, he must also prevent his client from imposing work upon the contractor which has not been agreed upon, or of requiring of him a superior quality of materials than has been stipulated for. Fair dealing,—the most absolutely fair dealing,—must be the distinguishing characteristic of an architect in the conduct of his business. An unfair man is not fit to hold such a position.

Then, in the settlement of the building accounts, the principle of fairness and impartiality must dominate the action of an architect, always keeping in view, of course, the nature of the agreement which has been entered into between the client and the contractor. This agreement (with the drawings and specifications,) now forms the basis of settlement. For so much money the contractor has agreed to perform so much work in such and such a manner. If no change has taken place in the design, and if the labor and material have been satisfactory, then all that remains for the architect to do is to put his name to the account and request his client to pay it. But experience shows that in building, as in everything else, we cannot proceed very far without having to reckon with the law of change. And if changes have taken place, as in all probability they have, the architect will have been very remiss in his duty if he has not kept his client informed of them, and of the additional cost they are likely to entail upon him. In the majority of cases it is true the changes in a building during its progress are suggested by the client himself. But a variety of circumstances may arise which demand that alterations be made; and which being in the interest of his client, an architect has power to make. Still, these must be reported to the client if an architect will faithfully perform his duty and avoid the irksomeness and unpleasantness of a disagreement over the settlement of the accounts. If, however, the architect has kept his client "posted" as to the changes that have taken place, he must be careful now

to prevent any overcharge being made in respect of them. He must allow of no claim for extras,– that nightmare that disturbs the first dreams of every one who contemplates building, and haunts him till its completion—where an intelligent comparison of plans and specifications, and the evident purpose and intention of both, will allow of none. But such alterations as have taken place by written authority or agreement, he must value at a fair and reasonable price, in proportion to the original contract sum, adding to or deducting from that amount as the case may be. And here it may be said, in passing, if a system of tendering for buildings by bills of quantities were adopted in Canada, similar to that which exists in Great Britain, a great deal of unpleasantness would be avoided, and a much more satisfactory and equitable result arrived at, in the settlement of building accounts.

It will be quite apparent from what has already been stated, that some very important duties of an architect have not been touched upon. But as they fall more within the sphere of his relation to the contractor, it will be better to deal with them in another paper.

OUR ILLUSTRATIONS.

HOUSE AT NEEDHAM, MASS., FOR MR. CLARENCE H. HATHAWAY —KNOX, ELLIOT & JARVIS, ARCHITECTS, TORONTO.

UNIVERSITY OF TORONTO NEW BUILDINGS FOR BIOLOGICAL DEPARTMENT.—DAVID B. DICK, ARCHITECT, TORONTO.

ONTARIO ASSOCIATION OF ARCHITECTS.

ARRANGEMENTS are being completed by the officers of the above Association for the first annual convention to be held in Toronto on Wednesday and Thursday, Nov. 21st and 22nd. The place of meeting has not been definitely decided upon, but will probably be the Canadian Institute building.

In addition to the opening address of the President, interesting reports may be looked for from the Committees entrusted with the furtherance in various directions of matters affecting the interests of the profession, with the discussions consequent thereupon ; also the reading of papers on "Professional Ethics," by Mr. Edmund Burke ; "Competitions," and "The Relations of Architects to their Clients," Mr. S. G. Curry, ; "Ventilation," Mr. D. B. Dick ; "H. H. Richardson and his Work," Mr. W. A. Langton ; "Foundations," Mr. H. B. Gordon ; "Office Management," Mr. R. W. Gambier-Bousfield.

This meeting should be made a success if it requires the efforts of every member towards that end. The question of incorporation will come up and surely every member is sufficiently interested in that matter alone to cause him to give some thought to it and bring him to Toronto to take a hand in the discussion. It is proposed to give ample time for the thorough discussion of the proposed Bill, as the views of every member is desired. It is hoped that the members outside of Toronto will take sufficient interest in this convention to take an active part. So far no papers have been volunteered by any but Toronto men. In fact letters have been addressed to the Directors living out of Toronto asking them to assist in obtaining papers, and so far they have not even acknowledged their receipt. We do not understand their apathy, and must certainly hold them guilty of neglecting their duties. The Toronto men do not wish to manage or run the whole affair, but if they cannot receive any assistance even when they take the trouble to ask for it, they must not be blamed if they seem to be the controlling and energizing influence of the Association. Action speaks with much greater force than loud or continued talking. Let us work before this meeting and do the talking at the meeting.

The social features of the occasion are not being overlooked. They will include a dinner and a drive to the principal points of interest in the city. Architects from cities and towns outside of Toronto will not be asked to contribute anything towards defraying the cost of entertainment. We desire to draw the attention of members again to the exhibition of drawings which it is proposed to hold while the convention is in session. Drawings of meritorious work, whether new or old, are earnestly solicited. A considerable number of the resident architects have signified their intention to contribute sketches to this exhibition, but the number of such offers from outside points is not what the management would desire. We would urge every architect who can do so to contribute to make this exhibition a success, and to correspond immediately with the Secretary of the Association on the subject. We look forward hopefully to a largely attended, pleasant and profitable gathering on the occasion of the approaching convention.

A KINDLY INVITATION.

CINCINNATI ARCHITECTURAL CLUB,
CINCINNATI, Oct. 7th, 1889.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—I send enclosed copies of circular, etc., issued in connection with the proposed National Exhibition of Architectural Drawings and Sketches, to be held in this city contemporaneously with the joint convention of the American Institute and Western Association of Architects. As you see in our circular, the exhibition is open to receive contributions from Canada as well as the United States, and I certainly hope that our Canadian brethren will not be backward in making use of this invitation. On the 16th of last month I sent copies of these circulars to the Secretary of the Architectural Draughtsmen's Association of Toronto, but we have received no reply or notice of their intentions. To you, therefore, as the recognized organ of the profession in Canada, we would entrust our interest in the collection of an exhibit that will do credit to your city at least. You should understand that contributions are not confined solely to the individual works of draughtsmen, but may also include the efforts of all practising and egitimate architects. As you will notice, we pay all costs for transportation, hanging and returning, and in addition we purpose to insure all drawings while in our possession, The responsibility of the Express Co. is practically sufficient insurance during transportation.

From the *American Architect* we have noticed and followed the organization and development of the Ontario Association of Architects. Why can't we get them, as an Association, to undertake a collection of drawings from among their members to enter our lists? Please urge this matter for us, and do what you can. If it would be of any interest to your readers to know who are going to contribute, I could arrange to keep you generally posted. Meantime, I can give the names of the following artists who have already notified us of their intention to forward contributions : From Boston—water-colors from K. S. Peabody, C. Howard Walker, R. Clifton Sturgis, C. H. Blackall ; pen and ink from D. A. Gregg, F. H. Bacon, R. C. Stingis, E. Eldon Deane. From Minneapolis—Harvey Ellis, A. B. Chamberlain and others. New York—Henry P. Kirby. Chicago Architectural Sketch Club ; Detroit Architectural Sketch Club ; Boston Architectural Club ; Columbus Architectural Sketch Club ; St. Louis Architectural League ; Rochester Architectural Sketch Club ; St. Paul Architectural Sketch Club ; Denver Architectural Sketch Club.

Yours very truly, G. W. E. FIELD,
Pres. C. A. C.

[We beg to assure the Architectural Club of Cincinnati that the members of the profession in Toronto, and we venture to say throughout Canada, reciprocate heartily the fraternal feeling so clearly manifest in the above letter. They esteem it an honor to be accorded the privilege of representation at the forthcoming National Exhibition of Architectural Drawings. Unfortunately, however, circumstances render it impossible for Canada to be represented on this occasion. The annual convention of the Ontario Association of Architects will take place simultaneously with the joint convention to be held at Cincinnati, and arrangements have also been made for an exhibition of Architectural drawings during the two days of the convention. It will thus be seen that Canadian architects are debarred from availing themselves of the invitation so kindly tendered them by their American brethren. At some future time they hope to be in a position to do so. Another serious obstacle in the way of Canadian architects who may desire to send drawings to the United States is the trouble and annoyance encountered in connection with customs departments of both countries.—EDITOR C. A. & B.]

"CANADIAN ARCHITECT AND BUILDER" SERIES OF PRIZE COMPETITIONS.

THE following is a list of competitions in Architectural subjects which we have decided to hold during the winter :—

1st.—Plans of a serving pantry, 100 square feet in size, showing cupboards, shelving, etc., with details of same. Plans to be sent in on or before 1st November next. First prize $5 ; second, one year's subscription to CANADIAN ARCHITECT AND BUILDER.

2nd.—Designs for three plaster cornices of 20 inchse, 25 inches and 30 inches girth; and of three centre pieces of 15 inches, 20 inches, and 25 inches diameter. Designs to be sent in on or before 1st December next. First prize, $5 ; second, one year's subscription to C. A. & B.

3rd.—Essay on Plumbing. Essays to be sent in on or before 1st Jan. 1890. First prize, $10 ; second, one year's subscription C. A. & B.

4th.—Designs with details for a verandah running across the front of a house 40 feet wide, and an outside wooden porch to a front door. Designs to be in on or before 1st Jan, 1890. First prize, $5; second, one year's subscription to C. A. & B.

5th.—Designs with details for front doors and vestibule. Designs to be sent in on or before 1st Feb. 1890. First prize, $5 ; second, one year's subscription to C. A. & B.

6th.—Details of the interior of a small house to include those for staircase, doors, architrave, base and windows. Designs to be sent in on or before 1st March, 1890. First prize, $10 ; second, one year's subscription to C. A. & B.

7th.—Design with details for four mantels, two of wood, one of brick and one of stone. Designs to be sent in on or before 1st of April, 1890. First prize, $5 ; second, one year's subscription C. A. & B.

8th.—Three designs, with details, for front fence. Designs to be sent in on or before 1st May, 1890. First prize, $5 ; second, one year's subscription C. A. & B.

9th.—Essay on Heating and Ventilation. Essays to be sent in on or before 1st May, 1890. First prize, $10; second, one year's subscription C. A. & B.

10th.—Plan of a bath room for a medium sized house, showing the best position of fixtures ; not more than five fixtures to be shown, or more than 75 square feet devoted to the bath room. Plans to be sent in on or before Jan 1st, 1890. First prize, $5 ; second, one year's subscription C. A. & B.

The Architectural Guild of Toronto have very kindly appointed a committee from their number to judge the above competitions. We shall publish each report as sent to us by the committee. Draughtmanship neatness and clearness of arrangement of drawings will be taken into consideration in awarding positions.

Drawings must be made on sheets of heavy white paper or bristol board, 14 x 20 inches in size, and must be drawn to allow of their being reduced to one-half the above size. Drawings must be made in *firm, strong lines*, with pen and *black* ink. No color or brush work will be allowed.

Each drawing must be marked with the *nom de plume* of its author, and the author's name, *nom de plume* and full address, enclosed in sealed envelope, must accompany each drawing sent in.

We reserve the right to publish any design sent in.

Drawings will be returned to their authors within a reasonable time after the committee has given its decision.

THE VIADUCT SCHEME.

THERE seems to be a concensus of opinion that a viaduct should be built along the city front with the object of running the railway tracks from the level. There can be no doubt as to the very great benefit which would result to the city and its inhabitants if the dangers of the bay front were removed. That they will be removed, is only a question of time. If it does not become an accomplished fact at present, it will in the future, when the increased size and importance of the city will force the carrying out of some such scheme at a much greater cost than is now requisite. There are, as might be expected, many opinions as to the manner in which this much needed work should be constructed. Two reports by eminent and capable engineers have been prepared and are now before the public for consideration. While in the main these reports agree, they differ very materially in detail. One recommends an iron or steel trestle, the other an embankment between retaining walls of masonry. There are many questions of detail referred to in the reports which do not bear to any great extent on the main questions as to the raising of the tracks. Such questions can be settled only by the parties interested. What is required is, that a general scheme should be laid down, after which the minor points can be discussed. Mr. Wellington recommends an iron or steel structure with four tracks, the erection of a Union Station on the Parliament Block, pressing back of the railways to the west of York street, the opening of a freight yard in the east end, and a swing bridge over the Don. Messrs. Gzowski & Shanley favor an earth embankment between retaining walls, the building of a station on the site of the old Parliament buildings, and tracks to the south of the embankment for the unloading of freight along the bay front. It now remains to adopt one or other of these schemes, or combine them into one scheme, or with the information they supply and such additional as may be obtained, build up a more complete and perfect one. For ourselves, we are of the opinion that the solution of the question has only been entered upon. The solution is made very much more difficult owing to the very heavy outlay which must be incurred, and the magnitude of the interests involved. The carrying out of the most thorough scheme might be too great a burden for the city. It is, therefore, a question which must be solved from two points, the engineering and the financial. The engineer might easily evolve a scheme which the finances of the city could not meet. Engineer and financier must together solve the question.

Two months ago we advocated a scheme which the reading of the above reports has convinced us is practicable, and in the end much the better investment, although it would entail a larger amount of outlay. Mr. Wellington and Messrs. Gzowski & Shanley in their scheme surrender up a strip of land of at least 60 feet by the entire length of the viaduct or embankment. That such land is most valuable needs not to be affirmed. Whatever its value, the sum must be included in the total cost. From neither of the above schemes would any revenue be derived except whatever sum the railways would pay. According to Mr. Wellington, they should pay 2½ per cent. on the cost of the viaduct, while they would be allowed 3½ per cent. on the value of their land or other interest surrendered to the city. We would not be surprised that the railways would show or at least try to show that under such an arrangement the city would be entitled to pay them a yearly sum instead of them paying the city. Mr. Wellington would have done well if he had made no mention of financial questions beyond what was absolutely necessary. Nearly all his conclusions are formed on possibilities which are not at all likely to come to pass. Messrs. Gzowski & Shanley more wisely considered only the engineering problem, except in so far as it was necessary to consider the question from other points.

We will now consider the scheme we advocated in this journal with the additional information which has been supplied since it was published. We advocated the erection of a row of two storey with basement warehouses along the entire bay front from Simcoe street east, above which the railway tracks could be placed. The party walls between these warehouses would have to be made heavy enough to bear the girders on which the railway tracks would be carried. As the spans need not be greater than 30 feet the girders would not be heavy, nor would the party walls require to be made of any great additional thickness to carry the tracks. This scheme makes full use of the ground occupied by the tracks, and allows of a direct return in the form of rents to meet the interest charge. The warehouses could be made 100 feet deep from north to south, and having good light, would rent readily. The railway tracks could be placed on the north side and only the necessary length of party wall to carry tracks made heavier than usual in warehouse work. If the railways required 50 feet, there would still be left an equal amount on the south side, which could be made a magnificent promenade. That such promenade would be of great value all will admit, as it would be within easy reach of thousands, and would have the refreshing breezes of the lake continually blowing across it. The view of the bay and lake would be well worth any exertion necessary to reach the promenade. Elevators could be placed at all the main thoroughfares by which the top could be gained by paying a small fee. We would make no change in wharfage, etc., from that suggested two months ago. If the elevator system suggested at that time could not be made of sufficient value, it could be left out, and tracks laid along the south face of warehouses which would allow of goods being delivered directly into the warehouses. Warehouses thus placed in direct connection with the railways entering the city and alongside a wharf should find tenants at high rentals. We doubt not but that many parties would be willing to build the width of a warehouse in length of the viaduct if they were given a twenty or twenty five years' lease of the warehouse they erected. The spans thus formed under the viaduct could be used for a great number of purposes—warehouses in the most central part, factories, etc., at a greater distance from the business centre, and storage and coal yards in the least valuable positions. That every part of the space under such a viaduct could be rented at figures which would go a long way towards paying the interest charge on the cost of the entire structure is almost a certainty. That the rents would pay a very high interest rate on the additional cost which would be incurred in constructing warehouses, etc., beneath the tracks, over and above the amount required for either a steel trestle or an earth embankment, should not require to be stated, as it should be clear to every one. By the warehouse scheme the land occupied by the viaduct is made of value, and a return is obtained. By either of the other schemes the land is lost. The property on the Esplanade will be increased very much in value by the warehouse scheme beyond what it would be increased by either the steel viaduct or earth enbankment scheme.

We do not approve of the station scheme brought forward in either of the reports. A station with six tracks in it, all of which must be reached by passing over the intermediate ones as is done in Buffalo and Rochester stations, is not in our opinion a good arrangement. A station where the trains enter and leave from platforms running out from a main platform is the best arrangement for a station. But this plan cannot be adopted for the Toronto station, as trains must be able to pass through the station in either direction. Such being the case, the next best arrangement is one whereby the different platforms may be reached by means of a passage below the tracks as is done in one of the stations in Manchester, Eng. We gave the level of the tracks at 32 feet above the Esplanade. Front street is 14 feet above, which would place the tracks 18 feet above Front street. The station yard could be raised 5 feet which, with the floor of the waiting room 3 feet above yard level, would make the level of the passage way 20 feet above the Esplanade and 10 feet below the level of tracks. This would give 8 feet clear head room in passage, and necessitate a lift of about 12 feet to the train platform. To gain the train platform we should make runs in both directions of an easy grade, and also place stairs at the side of main passage. The above arrangement would make it impossible for people to take the wrong train, or in any way to get upon the tracks. There would be two baggage rooms, one at each end of the station, for east and west baggage, which would allow of the handling of all baggage without blocking up the platform or interfering with the passengers. The baggage trucks could be lifted from the level of the baggage room by lifts. The entire space below the station would be used as a freight shed, thus making full use of the increased height of the building. The freight shed would be lighted down through the station building from the roof-lights by pavement lights let in between the tracks between the platforms. That a most complete and commodious station could be planned on the above lines we are confident, and if time allows we will show that it can be done by making and publishing a plan at an early date.

We have every confidence in our scheme, and will take the trouble to put it into a more definite form when we can find the necessary time to work it up. The city of Toronto should not be content to do this thing in an imperfect way, but should take every care to work out a scheme which will meet the wants of the future in so far as they can be foreseen. We have had one badly muddled scheme in the Don improvements, which were entered upon without any very definite plan, except it was to spend money. his viaduct matter should be most thoroughly worked out and weighed in l points, and nothing done until everything has been provided for. What

is done in a hurry is generally badly done. Time given to perfecting a scheme at the beginning saves time in correcting blunders at the end.

Since the above was written we have seen in the *Mail* the outlines of a scheme by Messrs. McLennan, Stewart & Chapman. They go into figures to prove that warehouses under the tracks would pay. With this we agree. If this scheme had appeared before that outlined in this paper in August, it would have been a step in advance. As it is, it only supports the one suggested by us. This scheme has faults, and does not make full use of the opportunities offered. In fact it is in an exceedingly crude condition. The difference in levels of the tracks would result in the lower tracks being entirely covered by an embankment of snow every time we had a heavy storm. This method of hoisting is of the past and would not meet present requirements. They only have one storage floor, while our scheme would give three, and only require the tracks to be raised 32 feet, instead of 38 feet as their scheme calls for. That they did not see the article in this paper is evident, or they would have brought forward a much better digested scheme. However, the more schemes good and bad brought forward, the easier will be made the solution of this all-important question to the commercial interests of Toronto, and the improvement in the facilities for its inhabitants to obtain better health, by being given free access to the beneficial lake breezes.

THE QUEBEC DISASTER.

QUEBEC, Oct. 7th, 1889.

Editor CANADIAN ARCHITECT AND BUILDER.

SIR,—In compliance with your request of the 30th ult. for an article on the late land slide in this city, let me premise by saying that the whole Quebec promontory or rock on which the citadel and city are built, is not, like the Laurentian hills and mountains in the near vicinity, a compact mass of gneiss or so called granite, but formed of a series of parallel strata of a schistous and lamellar structure, geologically called, I believe, "Utica Slate."

These strata of a sedimentary nature and therefore originally more or less horizontal, have by some cataclysm of bygone days, been tilted up in a way to become nearly vertical; the strata towards the north side of the cliff inclining over or dipping inland, while towards the south and east they incline or dip towards the St. Lawrence, as more fully set forth by the Revd. Mr. Laflamme, of the Laval University M. R. S. C.

"The rocks composing these strata are far from being, all of them, solid and homogeneous. They are of different thickness, varying from feet to inches. They are fissured and cracked in directions more or less perpendicular or inclined to the lay of the beds, though generally parallel to the plane of clearage.

Water has entered for centuries at the crop out of several of the beds which under the influence thereof and that of frost and other climateric causes, have become disintegrated, reduced to rotten shale of a very thin lamellar texture, which can be extracted by the hand, and bordering, so to say, on a return to their original clay; thus dividing the more solid beds and bringing about a separation of the strata as indicated at the several crevasses hereinafter alluded to. In a word, the whole face of the cliff for some hundreds of feet north and south of the land slide and for many feet in depth towards the interior is of a loose and demoralized texture, and hence the danger."

The summit or highest point of the land slide, immediately underlies the salient angle of the fortification wall at the south end of Dufferin Terrace, which is built over the old carronade battery still to be seen beneath the terrace flooring at this point.

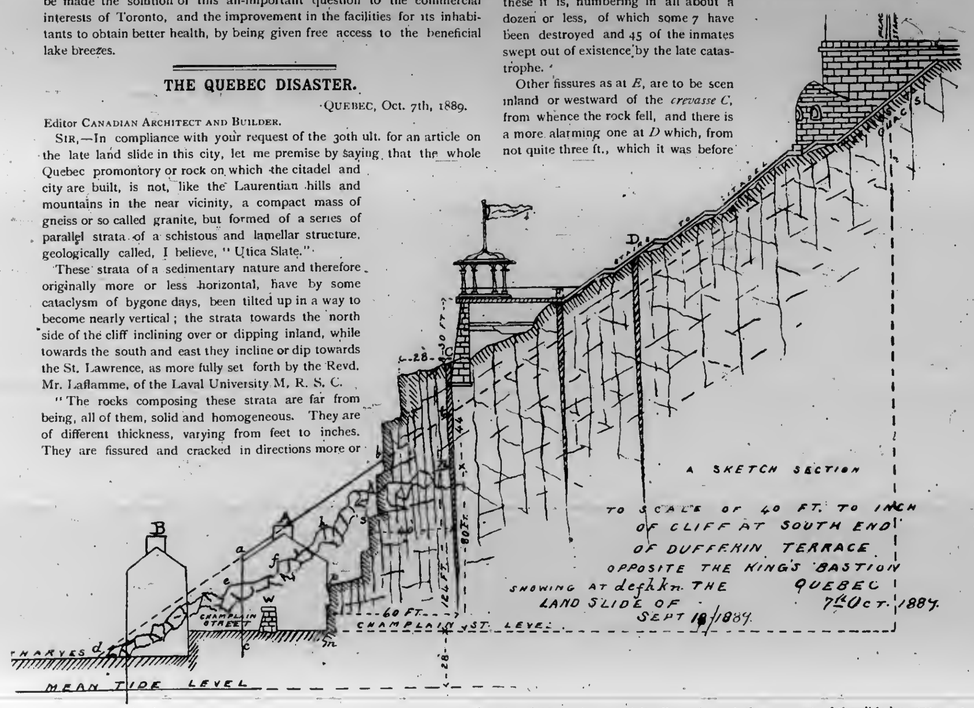
The terrace floor or promenade is at 182 ft. above mean tide level of the St. Lawrence. The wall supporting the terrace at its south extremity, is some 30 ft. in height. Champlain street is some 28 ft. above mean tide level at the site of the accident, and the cliff, therefore, at this point, about 124 ft. high above Champlain St.; the section or stratum of rock, a portion of which has given away being 60 ft. wide at base, 28 ft. at summit, and say of an average thickness of 40 ft.

The accompanying sketch is a section of the cliff at about the centre of the land slide and at its highest point; the cliff as it was before the occurence, being shaded by hatchings along its outer edge or outcrop, while the surface of the fallen rock is roughly shown at *d e c h k n*; the portion which gave way being that between *k* and *n*, along the line of fissure or *crevasse C N*, where the height from *C* to *N* is about 44 ft., while the length or extent of the fallen portion may be about 300 ft.

In Jan., 1880, at the request of Sir H. Langevin, Minister of Public Works of the Dominion, I reported as to the dangerous features of the rock and recommended that: either buttresses, *a c m p i j s k b*, be erected at intervals of some 20 to 30 ft., be some 30 ft. high at *a*, 80 ft. at *b*, to prevent the rock from falling, which should it do, I said, would destroy the houses on both sides of Champlain St., and sacrifice the lives of all the inmates; or that the houses be purchased and demolished, thus in either case saving the lives of the tenants or occupants.

This second or alternative scheme was decided on, but only partly carried out, by purchasing and demolishing the houses at *A* on the rock side of the street, while those at *B* on the opposite side were allowed to remain, and these it is, numbering in all about a dozen or less, of which some 7 have been destroyed and 45 of the inmates swept out of existence by the late catastrophe.

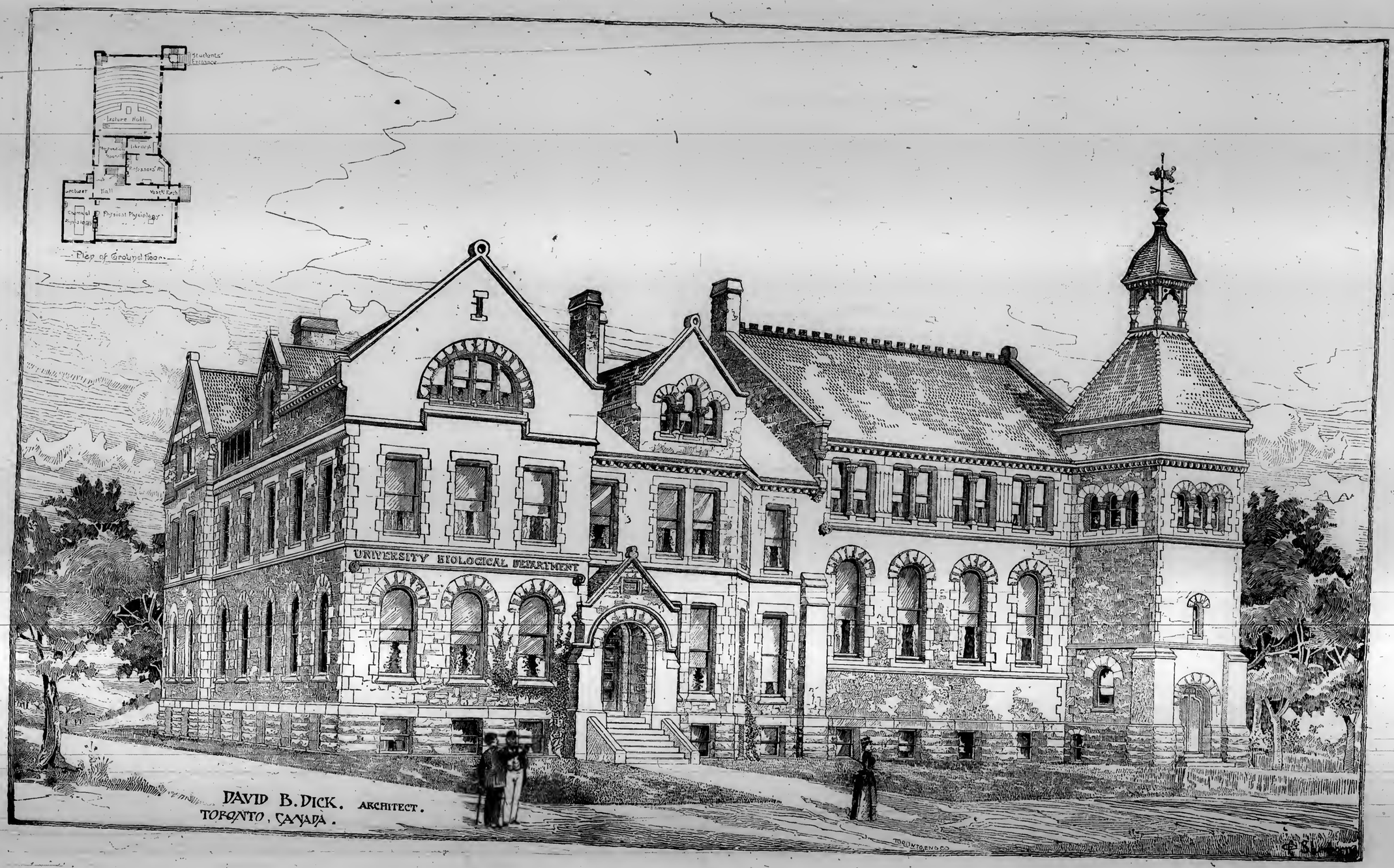
Other fissures as at *E*, are to be seen inland or westward of the *crevasse C*, from whence the rock fell, and there is a more alarming one at *D* which, from not quite three ft., which it was before the accident, increased its dimensions at the moment of the slide by some 7 or 8 inches, and is therefore now more than 3 ft. in width.



What I propose to counteract the overthrow of that portion of the cliff between *C* and *D*, some 80 ft. or more in width, is, that the upper portion of the rock from *C* towards *D* and down to *t*, be cut away in large masses of a cubic yard or more, and allowed to fall on top of the present *debris*, and trimmed off to the line of slope *d t*, which is one and a half base to one vertical; thus imitating the levelling hand of time, and by thus staying the base of the cliff, prevent the fall of the section of rock between the *crevasses C & D*, which portion is now more secure at this point of the cliff on account of the abutting *debris* from *d* to *n* than it was before the slide occurred.

To do this, a portion of the south end of the terrace must be sacrificed, the kiosk being removed to a point above *D*, to which the promenade may still extend by an incline or by a flight of easy treads from the present terrace level opposite the end of Des Carrieres St. Or the terrace, if the additional expenditure of some $20,000 to $30,000 for the purpose be warranted and can be afforded, may be kept intact by procuring elsewhere the required material—some 10,000 to 15,000 cubic yards more or less—and dumping it down from above on the present *debris*; or, as proposed by Mr Light M. I. C. E., though of course at still greater cost, by building a continuous buttress of solid cement masonry, of such a breadth of base and such a height as to prevent all future alarm and danger.

CHAS. BAILLAIRGE,
City Engineer.


Students' Entrance
Lecture Hall
Professor's Rm
Lecturer
Hall
Chemical
Physical Physiology
Plan of Ground Floor
UNIVERSITY BIOLOGICAL DEPARTMENT
DAVID B. DICK. ARCHITECT.
TORONTO, CANADA.

HOW TO ESTIMATE.

By "Cato."

FIGURING up trenches, the plan of which is a trapezoid, is done by first finding the area, by adding the sums of the ends together and dividing by two for a mean width. The result, multiplied by the length, will give the area, which is multiplied by the depth of the trench to get the solid contents or quantity to be excavated.

A like process can be employed if the depth of the excavation be a trapezoidal section by adding the greater and lesser depth together and dividing their sum by two for an average or mean depth, and multiplying by the superficial area as before to gain the solidity.

The area of an excavation whose plan is rhomboidal is found by dividing it into two equal triangles, and calculating the area of one by multiplying the common base, A, B, by half the perpendicular height, the result of which doubled, equals the area.

Wells or other cylindrical excavations come under the head of cylinders, and can therefore be calculated by the rule covering it. For instance, if any one wishes to find the cost of digging a well or vault, say 10 feet in diameter, to a depth say of 12 feet, proceed by using this formula:

First multiply 10:0 x 3.1416, which, multiplied by 12=the number of cubic feet to be excavated.

It often seems strange that the cost should be figured up per cubic yard but if the estimator wishes to be more accurate he can figure per cubic foot, or per thousand feet, according as he wishes. It is a very good plan when estimating an excavation of great length and varying depth, to figure up the cost of one section of 10, 50, or 100 feet in length, multiplied by the width and mean depth; then to find the number of times this length will divide into the entire number of feet to be excavated.

STONEWORK.

Contractors for stonework usually estimate by the perch and cubic foot, though it is sometimes done by the square foot or square yard. A perch of stone or stone masonry measures 16½ feet long, 1½ feet wide and 1 foot high. It contains 24¾ cubic feet in the solid or in the quarry. When built in the wall 22 cubic feet make a perch, 2¾ cubic feet being deducted for the mortar and filling.

It is usual to allow about three pecks of lime and 4 bushels of sand to a perch of masonry, but in New York and other American cities proportions of half and half and often one peck of lime to 4 bushels of sand is put in.

In ordinary square work, as footings and cellars, multiply the length, breadth and height together, to find the number of cubic feet it contains, and divide by 24¾ or 24.75 to find the number of perches it contains. Divide by the above number when the stone is laid dry; if bedded in mortar, divide by 22 thus: how many perches in a wall 60 feet long, 4 feet 6 inches high, 15 inches thick.

60
4½
240
30
270
67½
337½ cubic feet.

337½ ÷ 24¾ = 13 7-11 perches in wall.

Sash frames with sash weights, locks and trim complete, may be taken out of old buildings that are being taken down and preserved just as good as new by screwing slats and braces on them, which not only keeps the frame square, but prevents the glass from being broken. Doors, frames and trims may also be kept in good order until used, by taking the same precaution as in window frames.

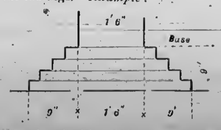
RULES FOR THE THICKNESS, ETC., OF BRICK WALLS

ACCORDING TO THE METROPOLITAN BUILDING ACT (LONDON, 1855).

NOTE.—Subsequent Metropolitan Building Acts made no alterations in these rules.

RULE FOR FOOTINGS.

The projection of the footing at the bottom of every wall on each side shall be at least equal to one half the thickness of the wall at its base. The diminution of the footings shall be in regular offsets, and the height from the bottom of the footing to the base of the wall shall be at least equal to one half the thickness of the wall at its base, the base of the wall being the first course above the footings. *Example*:



Here the wall at its base is 1 ft. 6 in. thick, therefore the projection on each side must be at least 9 in., and the height from the bottom to top of the footings must also be 9 in.; not less.

Bricks are here supposed to be not less than 8½ in. long or more than 9½ in. long.

EXTRA HEIGHT OF A STORY.

If any story exceeds in height the thickness prescribed in the tables below for that story multiplied by 16, the walls of that story must be increased in thickness one-sixteenth part the height of the story.

Example—Height of story, say 17 ft. 4 in.

Thickness of wall described, 13 in.

Now, as 17 ft. 4 in. is sixteen times the thickness of the wall, the wall is to be thickened by one-sixteenth the whole height, or 13 in., making 26 in. the correct thickness.

But this extra thickness may be confined to piers distributed properly, the total widths of the piers being equal to ¼ the whole length of the wall.

Example—Extra thickness is 13 in.

Total length of wall, say 30 ft.

¼ length of wall is 7 ft. 6 in.

The width of the piers must together equal 7 ft. 6 in.

You have therefore a wall 17 ft. 4 in. high, 30 ft. long, 13 in. thick, with four piers that are each 1 ft. 10½ in. wide on face.

No story enclosed with walls less than 13 in. thick shall be more than 10 ft. high.

DWELLING HOUSES.

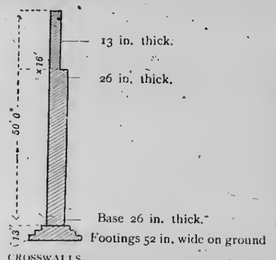
The following tables give the heights of the walls in the left hand column, and the lengths in the corresponding horizontal columns. The lengths of the walls are supposed to be curtailed by return walls at either end, and the length of the wall is measured from center to center of the return walls.

I.	II.	III.	IV.
Height up to 100 ft.	Length up to 45 ft.	Length up to 80 ft.	Length unlimited.
	1st story 21½ in. thick 2nd " 21½ " 3rd " 17½ " 4th " 17½ " 5th " 17½ " Remainder 13 in. "	1st story 26 in. thick 2nd " 26 " 3rd " 21½ " 4th " 21½ " 5th " 17½ " 6th " 17½ " Remainder 13 in. "	1st story 30 in. thick 2nd " 26 " 3rd " 26 " 4th " 21½ " 5th " 21½ " 6th " 17½ " 7th " 17½ " Remainder 13 in. "
Height up to 90 ft.	Length up to 45 ft.	Length up to 70 ft.	Length unlimited.
	1st story 21½ in. thick 2nd " 21½ " 3rd " 17½ " 4th " 17½ " Remainder 13 "	1st story 26 in. thick 2nd " 21½ " 3rd " 21½ " 4th " 17½ " 5th " 17½ " Remainder 13 "	1st story 30 in. thick 2nd " 26 " 3rd " 26 " 4th " 21½ " 5th " 17½ " 6th " 17½ " Remainder 13 "
Height up to 80 ft.	Length up to 40 ft.	Length up to 60 ft.	Length unlimited.
	1st story 21½ in. thick 2nd " 17½ " 3rd " 17½ " Remainder 13 "	1st story 21½ in. thick 2nd " 21½ " 3rd " 17½ " 4th " 17½ " Remainder 13 "	1st story 26 in. thick 2nd " 21½ " 3rd " 21½ " 4th " 17½ " 5th " 17½ " Remainder 13 "
Height up to 70 ft.	Length up to 40 ft.	Length up to 55 ft.	Length unlimited.
	1st story 17½ in. thick 2nd " 17½ " Remainder 13 "	1st story 21½ in. thick 2nd " 17½ " 3rd " 17½ " Remainder 13 "	1st story 26 in. thick 2nd " 21½ " 3rd " 21½ " 4th " 17½ " Remainder 13 "
Height up to 60 ft.	Length up to 30 ft.	Length up to 50 ft.	Length unlimited.
	1st story 17½ in. thick Remainder 13 "	1st story 17½ in. thick 2nd " 17½ " Remainder 13 "	1st story 21½ in. thick 2nd " 17½ " 3rd " 17½ " Remainder 13 "
Height up to 50 ft.	Length up to 30 ft.	Length up to 45 ft.	Length unlimited.
	Wall below topmost story 13 in. thick T'pm't st'y 8½ " Remainder 8½ "	1st story 17½ in. thick Rest of wall below topmost st'y 13 in. thick T'pm't st'y 8½ " Remainder 8½ "	1st story 21½ in. thick 2nd " 17½ " Remainder 13 "
Height up to 40 ft.	Length up to 35 ft.	Length unlimited.	
	Wall below 2 topmost stories 13 in. thick 2 topmost stories 8½ " Remainder 8½ "	1st story, 17½ in. thick. Rest of wall below top story 13 " Topmost story 8½ " Remainder 8½ "	
Height up to 30 ft.	Length up to 35 ft.	Length unlimited.	
	Wall below 2 topmost stories 13 in. thick 2 top. st'ys 8½ " Remainder 8½ "	Wall below top story 13 in. thick. Topmost story 8½ " Remainder 8½ "	
Height up to 25 ft.	Length up to 30 ft.	Length unlimited.	
	From base to top of wall 8½ in. thick	Wall below top story 13 in. thick. Topmost story 8½ " Remainder 8½ "	

WAREHOUSES, MANUFACTORIES, BREWERIES, ETC.

Height up to 100 ft.	Length up to 55 ft. Base 26 in. thick.	Length up to 75 ft. Base 30 in. thick.	Length unlimited. Base 34 in. thick.
Height up to 90 ft.	Length up to 60 ft. Base 26 in. thick.	Length up to 70 ft. Base 30 in. thick.	Length unlimited. Base 34 in. thick.
Height up to 80 ft.	Length up to 45 ft. Base 21¼ in. thick.	Length up to 60 ft. Base 26 in. thick.	Length unlimited. Base 30 in. thick.
Height up to 70 ft.	Length up to 30 ft. Base 17½ in. thick.	Length up to 45 ft. Base 21½ in. thick.	Length unlimited. Base 26 in. thick.
Height up to 60 ft.	Length up to 35 ft. Base 17½ in. thick.	Length up to 50 ft. Base 21½ in. thick.	Length unlimited. Base 26 in. thick.
Height up to 50 ft.	Length up to 40 ft. Base 17½ in. thick.	Length up to 70 ft. Base 21½ in. thick.	Length unlimited. Base 26 in. thick.
Height up to 40 ft.	Length up to 30 ft. Base 13 in. thick.	Length up to 60 ft. Base 17½ in. thick.	Length unlimited. Base 22½ in. thick.
Height up to 30 ft.	Length up to 45 ft. Base 13 in. thick.	Length unlimited. Base 17½ in. thick.	
Height up to 25 ft.	Length unlimited. Base 13 in. thick.		

The thickness of the top of walls of this class and for sixteen feet below the top to be 13 inches, except when the wall is not more than 30 feet high, when it may be —— 8½ inches. Below this 16 ft. point from the top, the walls to be built solid, of the thickness of the base.



CROSSWALLS.

The thickness of a crosswall shall be two-thirds of the thickness described for the class of buildings to which it belongs, but never less than 8½ inches, and no wall subdividing any building shall be deemed to be a crosswall, unless it is carried up two-thirds the height of the outside walls, and unless the openings and recesses in it do not exceed one-half the vertical surface of the wall in each story.

PERSONALS.

We regret to learn that Mr. T. J. Heard, marble dealer, London, Ont., has been forced to make an assignment. It is said that this step was brought about by taking a contract at too low a figure in connection with the new public buildings at Goderich.

Mr. Thomas Hooper, architect, of Vancouver, B. C., is at present on a visit to the east, for the purpose of examining the best models of church architecture. The knowledge thus gained he proposes to utilize in preparing the plans for a new Methodist Church in Victoria.

The following is said to be a good recipe for plastering on the outside of a brick wall. Take of slaked lime 60 parts; sand, 35 parts; litharge, 3 parts; knead and work the ingredients into a stiff mass with 7 to 10 parts of linseed oil; use old oil or linseed oil varnish. It should be well worked to the consistency required and applied as other mortars, well troweled down. Or, sand, 90 parts; litharge, 5 parts; plaster of paris, 5 parts, moistened and worked together with a small portion of linseed oil. Oil the brick three coats before applying the cement, and trowel down.

The heavy fall rains bring the annual complaint of leaky brick walls and consequently the usual quota of ruined ceilings and plastering. The preservative for brickwork made by Samuel Cabot, of Boston, thoroughly waterproofs the brick for an indefinite time, and yet it does not change their appearance. Actual trial shows that one coat of this material is a better waterproofing than three coats of linseed oil. Besides this, linseed oil is injured by the lime of the mortar, and rendered useless by the weather, to neither of which objections is Cabot's brick preservative open. It is cheap, lasts indefinitely, waterproofs bricks without changing their appearance, and is easily applied with a brush.

SANITATION AND HEATING

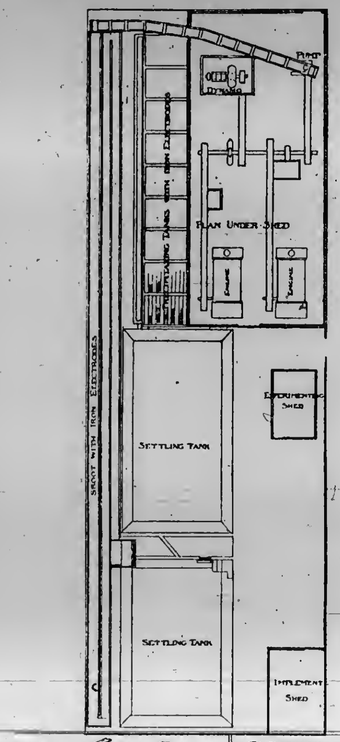
DISPOSAL OF SEWAGE BY ELECTROLYSIS.

At a meeting of the Ontario Provincial Board of Health held in Toronto on the 3rd inst., Dr. Coverntон read a paper on the above subject, in which the following description was given of the *modus operandi* adopted by Mr. W. Webster F. C. S., who is engaged in extensive experiments at Crossness, England :—

The dynamo is an Edison-Hopkinson capable of developing an energy of 43 horse power. From the dynamo the leads run through resistance frames by means of which the amount of current can be regulated without varying the speed of the engine. These are then connected with the iron electrodes in both the precipitancy tanks and shoot. The precipitancy tanks are used for taking experimental measurements, so as to discover the best mode of arranging the electrodes hereinafter called plates made of cast iron run direct from blast furnaces. The shoot is fitted with wrought iron plates, more convenient for experimental work. They are thinner and weigh less than if made from cast iron. The shoot is of wood, but in any permanent work it would be built of concrete, bricks or iron. The bottom would be lined with asphalt, or other suitable material. The sewage is discharged into the shoot from the pump connected with the main sewer. The shoot is fitted with plates. In travelling along the shoot every particle of sewage comes in contact with the plates, and finally the whole is received into one or other of the settling tanks. The plates in this shoot are divided into twelve sections. All the plates in each section are connected in parallel, and the sections can be connected either in parallel or in series, as may be most convenient. I find it best to run them arranged in six sections as series, as owing to the low tension of the dynamo it is convenient to split them up into a greater number. The dynamo should be near the center of the shoot, and practice has proved that it must be so constructed that as many sets of plates as possible may be arranged in series, but the space at my command in these works does not admit of the most effective arrangement being adopted. My experiments proved that with 27 h. p. it is possible to treat 1,000,000 gallons of sewage in 24 hours. These figures relate to average London sewage. As to the cost of engine power, the newest type of engines suitable for driving dynamos may be taken to consume two pounds of coal per h. p. per hour. The experiments carried out with reference to the amount of iron consumed by this process tend to prove that the consumption in continuous working should not be more than two grains per gallon. Here, again, the cost depends entirely upon the position of the works, or, more properly speaking, the district in which the works are situated. The plates of pig iron are one inch thick, and, if used in sufficient numbers, would last for many years when once fixed. For instance, I will take a town with a flow of 10,000,000 gallons of sewage per day, corresponding to a population of 300,000 at 30 gallons per head. To treat this amount of sewage, the consumption of iron should not exceed 464 tons per annum. On calculating the amount of mechanical power required per head of the population, I find it represents eight horse power per 1,000. It will be seen that the above plant is practically in lieu of mixing tanks, machinery and chemicals employed in the chemical processes for the treatment of sewage. If such electrical plant is designed to meet the peculiar requirements in any particular district, it must, in my opinion, cost less and have a greater efficiency than any other process known, for not only does the electrical method precipitate the matters in suspension, but it also removes organic matter in solution and forms a precipitancy and disinfecting process in one operation The cause of any successful precipitation of suspended matter in sewage is entirely due to the formation of flocculent particles by means of chemical action. In the ordinary processes used this is obtained by the introduction of chemicals in a liquid form, and a large amount per gallon of sewage must be used to produce the necessary flocculency.

Electrolysis with oxidized plates produces this effect with a consumption of material ranging from one grain per gallon, and the stronger the sewage the less the power required to produce the effect. The action that takes place manufactures the necessary precipitancy agent in the sewage, whereas precipitation with solutions of chemicals means a consumption of several grains per gallon of the sewage, if the action is intended to cause an adequate deposition of matter in suspension, and the resulting effluent requires further treatment with some oxidizing agent to remove the organic matter in solution. With my electrolytical process at the same time that the precipitation of the suspended matter is taking place, the organic matter in solution is being oxidized by means of free nascent chlorine and oxygen given off at the positive plate.

The accompanying sketch will assist to a better understanding of the appliances used in the operation of this system :



SKETCHES AT CROSSNESS OF THE PURIFICATION OF SEWAGE BY ELECTROLISIS WEBSTERS PROCESS

Moved by Dr. Cassidy, seconded by Dr. Bryce : That inasmuch as it appears from the statements contained in the report on sewage and water supplies that there have been instituted up to the present year the sewage farm at London Asylum, the precipitation by porous carbon at Guelph Agricultural College, that the city of Toronto is about to expend money for testing the precipitation method of Major Conder ; be it therefore resolved, that the board demonstrate its confidence in the principles contained in the system of electrolysis of sewage as carried on in connection with London sewage at the Crossness works on the Thames by Mr. Webster, by urging that the Toronto Council consider the expediency of experimenting on this system, as well as that of Major Conder, and also that the Government be urged to introduce it as an experiment at the Belleville Institute, thus doing away with the complaint raised against that institution by the board of that city. Carried.

SOME FACTS ABOUT HEAT.

To have a change of temperature it is of course necessary that heat should pass from one body to another. This can be done in three ways. These are called conduction, convection and radiation. When heat is transmitted by what is called conduction it passes from particle to particle of matter. Each particle, we may suppose, as it receives more of that kind of motion which we call heat, increases the motion of its neighbor. When heat passes through a body of any kind by conduction, each particle of matter on its way is heated. The rate at which heat passes in this way is different for different bodies. Through silver heat passes fastest by conduction. Hence we say that silver is the best of all conductors of heat. Copper has a conducting power 81 per cent. as great as that of silver. Zinc is another very good conductor, its conducting power being about 64 per cent. of that of silver.

Through air, gases and liquids, heat cannot pass by conduction, at least, it passes in so small a degree that it is quite inappreciable. In other words, heat does not pass from one particle of a liquid or gas to another. There are a great many proofs of this, one of which is that either or any similar substance may be burned upon the surface of water, and although a great heat is produced, it will not affect a thermometer placed a fraction of an inch below the surface. Heat is readily communicated from solids to liquids and liquids to solids. When a particle of a liquid is heated by coming in contact with some hot solid, as, for example, the bottom of a dish in which it is suspended over a fire, being expanded by the heat, the colder and heavier particles press it upward toward the surface and themselves come in contact with the hot bottom of the dish. In this way the whole body of liquid or gas contained in a vessel is heated. This method of transmitting heat is called "convection." When we consider this it becomes easy to understand why it is impossible to heat all of a liquid or gas contained in a vessel or a room where there is no circulation. To become heated the circulation is necessary; every particle must in turn obtain its heat from a solid body, as the heat cannot pass from one particle to another. This accounts for a fact which has surprised many—that from some forms of steam boiler cold water can be drawn from the water legs while the boiler is making full steam freely, with the furnaces going full blast.

The third method by which heat may pass from one body to another is called "radiation." Heat radiated does not pass from one particle of a body to another, but goes through air or vacuum, or in some cases through solid bodies, with a very different velocity from that with which it is conducted. Radiant heat does not heat the body through which it passes. Thus the heat of the sun may be felt even when it passes through a pane of glass covered with frost. Many of our readers will call to mind Dr. Kane's experiment of a burning lens made from ice. In this case the heat rays from the sun were brought to a focus by passing through the ice lens, which was not melted. Most gases allow radiant heat to pass easily. When open fires were used for heating, it was radiant heat chiefly that warmed the rooms. This left the air comparatively cool; in fact the air was not warmed at all, save as it came in contact with the walls of the room or objects in it. One of the peculiar advantages of the old fashioned fireplace was in the coolness of the air as compared with objects in the room.

It is the intention of Dr. Laberge, medical officer of health of the city of Montreal, to get the drainage system extended all through the city, as he thinks this is the only way to improve the health of the community. Out of 150 miles of streets there are only 90 miles of drains, and he considers it imperative to construct the remaining 60 miles as speedily as possible. He is strongly of opinion that by so doing the death-rate can be reduced.

PUBLICATIONS.

WE have received from a New York firm of publishers and Patent Solicitors the offer of some back numbers of their alleged architectural journal, "bound in handsome flexible covers in imitation Turkey leather," in return for a half column puff of their business. The publication is of the back number variety, and utterly valueless in the opinion of nearly everybody except the publishers who set such a high price upon it. Under the circumstances we cannot see our way to accept this exceedingly liberal (?) proposition.

Mr. James Wolfe, the founder and for many years the editor of the *California Architect*, recently formed a joint stock company of local architects to publish that journal in future, and was himself appointed general manager. The change appears not to have proved satisfactory to the parties concerned, and Mr. Wolfe has severed connection entirely with the concern. The architects will now assume (in turn we presume) the editorial chair. In the multitude of counsellers there should certainly be wisdom. It frequently happens, however, that work is better done by a single individual than if left in the hands of half a dozen.

We have been favored with a copy of the Kalendar of the Institute of British Architects for 1889-90. It contains, in addition to the Kalendar, with the dates of meetings, etc., marked thereon, a list of Members, Fellows, Associates, Honorary Associates, Honoary Fellows, Honorary Corresponding Members and Retired Fellows, besides a mass of other information of much value to architects in and out of the Institute. One of the most interesting features of the volume before us, is a copy of the late Prof. Donaldson's letter, convening the foundation meeting of the Institute, dated 8th May, 1834, the names of the architects who attended the meeting, and the first address of the Institute adopted at a meeting held at the Thatched House Tavern, London, the 2nd July, 1834.

When the idea was first put forward that it was possible to operate high candle power incandescent lamps, in series with arc lamps, it was looked upon with suspicion by the electrical fraternity, but within the last year there has been quite a change of opinion, as it has been clearly demonstrated that by using a properly constructed cut-out, the incandescent lamps can not only be successfully but economically operated on the arc circuits. Of course this system can never be as satisfactory as either the direct or alternating systems, but for small towns, where the number of incandescent lamps is not sufficient to warrant the purchase of a separate plant, it fills the bill to a nicety.

MANUFACTURES AND MATERIALS

A TENACIOUS SOLDER.

AN account is given in the *Beliner* of a soft alloy which adheres so firmly to metallic, glass, and porcelain surfaces that it can be used as a solder, and which, in fact, is valuable when the articles to be soldered are of such nature that they cannot bear a very high degree of temperature, the composition consisting of finely pulverized copper dust, which is obtained by shaking a solution of sulphate of copper with granulated zinc. The temperature of the solution rises considerably, and the metallic copper precipitated in the form of a brownish powder—20, 30 or 36 parts of this copper dust, according to the hardness desired, being placed in a cast-iron or porcelain-lined mortar, and well mixed with some sulphuric acid having a specific gravity of 1.85. To the paste thus formed are added 70 parts by weight of mercury, with constant stirring, and when thus thoroughly mixed, the amalgam is well rained in warm water, to remove the acid and then set aside to cool; in ten or twelve hours it is hard enough to scratch tin. On being used, it is heated to a temperature of 375 degrees Centigrade, and when kneaded in an iron mortar becomes as soft as wax; in this ductile state it can be spread upon any surface, to which, as it cools and hardens, it adheres with great tenacity.

A patent has been granted William J. Copp, Hamilton, for a hot air heating stove.

An inexhaustible quarry of roofing slate is said to have been discovered at Howe Sound, British Columbia.

Granite is being supplied the recently burned city of Seattle, W. T., from Keefer's quarries, Vancouver, B. C.

A fine white powder, called aclinolite, is imported from Canada by New York contractors for sprinkling on the surface of newly-laid asphalt pavement to improve the color.

C. B. Wright & Son, of Hull, have received a contract for supplying 20,000 barrels of Hull cement to be used in the repairs to be made on the Cornwall canal.

Brenton & Adams, of Cumberland Co., N. S., have brought suit for $20,000 damages against Wm. Dobson for alleged depreciation of the value of the quality of a building stone quarry of which they are the owners.

A composition of matter called Firimite plastering, consisting in a mixture of air slaked lime, plaster of Paris, river sand, cow hair mixed with serum, purified with carbolic acid, has been patented by Geo. M. Ford, of Montreal.

The sub-contractors in the erection of the new Departmental Buildings at Ottawa, signalized the completion of the work by presenting Mr. Mallette, of the firm of Charlebois & Co., chief contractors, with a silver water pitcher and goblets, as a mark of their esteem.

A window glass trust is said to have been formed in the United States. The various works in the West have past into the hands of the United Glass Company, of New York, capitalized at $3,000,000. It is proposed to place the fifty-five window glass factories of the country under one management with main office in New York.

An old English recipe for a preparatory size for the gilding of plaster, marble and wood, obviating also the effect of greasiness in the grain of wood, is as follows: Boil a handful of the leaves of worm wood and two or three heads of garlic in a quart of water until the liquor is reduced to one-half, previously adding for wood, and for wood only, half a handful of salt; then strain it through a cloth and add half a pint of water. When used it is to be mixed with a sufficient portion of good glue, boiling hot. The reason for leaving out salt in the application of the composition to plaster and marble is that any dampness would then occasion a saline effloresence on the gold.

The Toronto Electric Light Company is starting 100 new street arcs and building the plant for 300 more. The company, of which Mr. J. J. Wright is superintendent, have 560 city lights under contract, and run nearly 900 in all. They have put in a new 250 horse power engine and two 100 horse power boilers.

CONTRACTS

CONTRACTS AWARDED.

The contract for the new post office at Lachine has been awarded to Mr. Fitzpatrick, at the price of $10,270.

The contract for the Owen Sound harbor works has been awarded to Mr. R. T. Sutton, of Toronto, the lowest tenderer.

HALIFAX, N. S.—The contract for the new hall for St. Mary's Society, has been given to S. A. Marshall. The price is $16,000.

STRATUROY, ONT.—The offer of Mr. Thomas Wrong, of Chatham, to put in a combined electric light and gas service, has been accepted.

CONTRACTS OPEN.

WOODSTOCK, ONT.—A new music hall is to be erected here.

KINGSTON, ONT.—A factory for the manufacture of oil-cloth, is to be erected here.

WEST TORONTO JUNCTION.—Wm. Hess & Son, have bought a site on which to build a furniture factory.

BRACEBRIDGE, ONT.—Mr. W. H. Croker, Orillia, has prepared the plan for a residence for Sheriff Bettes.

SARNIA, ONT.—It is proposed to spend $6,300 in extending the water-works system, and $2,000 for a fire alarm system.

WINNIPEG, MAN.—$6,000 of the $8,000 required for the erection of the proposed new Christ Church, has been secured.

NEW WESTMINSTER.—The city authorities are obtaining professional advice, with the object of constructing a water works system.

LONDON, ONT.—Plans have been prepared, and tenders will shortly be asked for the erection of the new C. P. R. depot in this city.

VICTORIA, B. C.—Plans have been prepared from Mr. James' sketches for officers' residences, quartermaster's stores and residence, and guard house at this place.

ORILLIA, ONT.—The Incumbent and Church wardens of St. James Church, have been empowered to borrow money on mortgage for the erection of a new church.

QUEBEC.—It is as good as settled that an additional story will be added to the Court House in this city, and other improvements effected, the estimated cost of which is $200,000.

MONTREAL, QUE.—The ratepayers are to be asked to vote for the expenditure of $1,000,000 in improvements to the harbor, with the object of keeping back the annual spring floods.—The Sun Life Assurance Co., ask for competitive designs for a new office building which it is proposed to erect immediately.—Plans have been approved for an additional story and dome for the court house. The estimated cost is $26,000.

VICTORIA B. C.—A company has been organized for the purpose of building a $200,000 hotel.—It has been decided to erect a new Roman Catholic Cathedral, to seat 1,000 and to cost $60,000.

TORONTO, ONT.—Plans are being completed for the proposed new drill shed. Tenders will shortly be called for.—Ex-Ald. Pells will erect a new opera house at the corner of King and Frederick sts.—Commander Law has been instructed to prepare plans for a residence for the Roman Catholic Archbishop of Toronto, to cost from $35,000 to $40,000.—The congregation of Charles street Presbyterian Church will erect a new edifice on Bloor street, at an estimated cost of $42,000.—On the recommendation of the Engineer an asphalt pavement with 4 inch stone kerbs will be laid on Ontario street from Carlton to Howard St.—The following building permits have been granted from the office of the City Commissioner since the date of our last issue: Polson & Co., 3 story boiler house, and 2 story workshop, Esplanade, cost $2,200; W. H. C. Kerr, alterations and additions 60 Yonge St., cost $8,000; W. H. C. Kerr, 16 3 story bk. stores and offices, Gerrard and Yonge Sts., cost $40,000; J. G. Robinson, 2 story and attic bk. dwelling, Dunn Ave., cost $5,000; Geo. Ratcliffe, alterations 14 Morris St., cost $1,000; W. Small, 3 story bk. shop, 1372 Queen St. W., cost $3,000; Jno. McClennand, three 2 story bk. fronted houses, west side Seaton St., cost 21,600; Geo. Oliver, one story bk. store and alterations, 131 Yorkville Ave., cost $4,500; Mrs. Hunt, det. 2 story and attic bk. dwelling, Wilcox St., west of Huron St., cost $3,000; A. Allen, det. 2 story and attic bk. dwelling, Euclid Ave., north of College, cost $3,800; Mr. Beecroft, four 2 story bk. dwellings, rear Melbourne Ave., nr. Dufferin St., cost $6,000; Dr. A. Smith, 2 story bk. stable and dissecting room, Richmond St. west, cost $1,500; W. Goulding, 2 story and attic bk. dwelling, St. George St., north of Bloor, cost $15,000; R. Kidney & Co., alterations 17 and 19 Lowther Ave., cost $1,500; Thos Fushingham, 2 story and attic bk. residence, Beatty Ave., cost $7,000; Dr. Cesar, 2 story and attic bk. dwelling, Grosvenor St., cost $8,000; S. Martin, 2 story and attic bk. dwelling and r. c. stable, 45 St. Vincent St., cost $4,000; A. Henderson, 2 story bk. additions east side Victoria nr. Parliament St., cost $2,500; J. Haltby, 2 story and attic bk. dwelling, east side Markham St., north of College St., cost $2,500.

"I made a discovery, a few days ago," said J. J. Wade. "I find that we have been putting our tanks too far above the bowl of the closet. We have been placing them seven feet apart and it should be only six feet. I find that the water goes out with too much force, thus making too much noise, and sucking the valve down into position too quick, and making a sounding noise, which instead of disappearing with the long use of the tank, becomes worse. It makes more noise, does not act as well, and does not give any better flush. You take my tank here, and it is perfectly noiseless—not making any noise when the water goes on or when it goes out. Hereafter I will put them up only six feet, and no higher.—*Sanitary Plumber.*

Notre Dame Cathedral, Montreal, will be lighted by electricity.

We are informed that a model electric light station is under construction in Brockville.

The Barrie Electric Light Company are putting in an additional incandescent system at a cost of $20,000.

The Picton Town Council will put in an $18,000 electric light plant, to be owned and operated by the town.

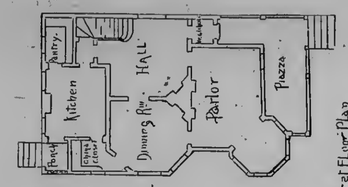
The Intercolonial Railway now has its own complete system of incandescent lighting, with dynamos and other appliances of a well-equipped electric light station at Moncton and Levis for the storage of its own batteries.

The patent right to the apparatus for removing incrustations, sediments, or deposits of any kind from water pipes or mains, belonging to Mr. E. H. Keating, of Halifax, N. S., has been purchased by Mr. C. F. Fraser, the price paid for the Canadian patent being $20,000.

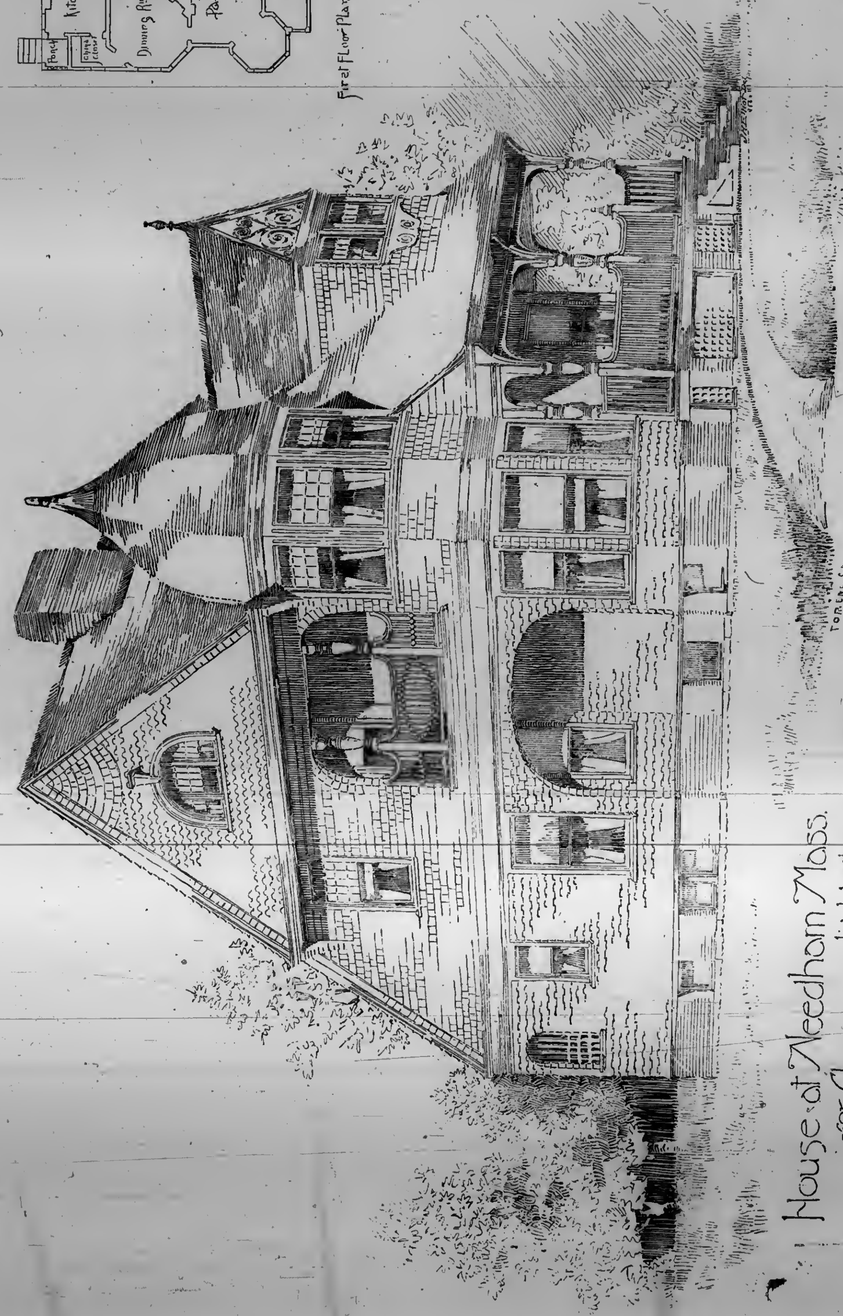
David H. Cameron, Stanhope, Que., has been granted a patent for a composition, for rendering wood indestructible by insects, moisture, or other causes. It consists of a compound of pitch tar, resin, coal tar, tallow and asphaltum mixed together in the following proportions, viz.: five pounds of pitch tar, five pounds of resin, one pound of coal tar, one pound of tallow, one-half pound of asphaltum, boiled together and tempered to the desired hardness by using tallow and resin, and to be applied to the wood with a brush or broom which is then sprinkled with sand, which is rubbed into the wood with a roller made for the purpose.

A joint convention of the American Institute of Architects and the Western Association of Architects will be held at Cincinnati on November 20th.

The importance of the curtains and hangings as a feature of the decoration of a house has become so generally recognized that they are now being included in the original plan instead of being left to the fancy or caprice of the occupant. We learn from the *Builder and Woodworker* that in the elegant apartment houses now being erected in Brooklyn upon the plans of architect Henry F. Cook, of New York, the parlors will be elaborately decorated on the walls and ceilings with chandeliers, open fireplaces and looped curtains at the windows.



First Floor Plan



House at Needham Mass.
for Clarence H. Hathaway Esq.

Knox, Elliot & Jarvis, Architects.
Toronto.

CANADIAN ARCHITECT AND BUILDER

FINE AND INDUSTRIAL ARTS · DECORATION · FURNISHING
CONSTRUCTION · SANITATION · ENGINEERING

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—THE—

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ADVERTISEMENTS.

Prices for advertising sent promptly on application. Orders for advertising should reach the office of publication not later than the 12th day of the month, and changes of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The Ontario Association of Architects has appointed the "Canadian Architect and Builder" its official paper.

THE CANADIAN ARCHITECT AND BUILDER for December will contain a verbatim report of the proceedings in connection with the first annual convention of the Ontario Association of Architects.

TORONTO, Hamilton and Woodstock have new city buildings under construction, and the citizens of London are asking themselves the question whether their financial position is not strong enough to warrant them in falling into line in this direction.

THE supply of good architectural draughtsmen in Canada appears to be considerably below the demand. The suggestion has been made that here is a field for which women should be specially well adapted, and which in point of remuneration as well as in other respects would yield a more satisfactory return than many of the occupations in which they are at present engaged.

WE present our subscribers this month with a number which, in point of illustrations at least, is ot more than ordinary interest and value. During the last few months we have increased the number of our reading pages and added an extra page of illustrations with each issue. It is our purpose during the coming year, if a continuance of past support is accorded us, to introduce new features which will greatly increase the value of the publication to every reader.

THE London water inspector has been analyzing the water contained in numerous wells in that city from which families draw their supply for domestic use. The result is truly alarming. Only two wells out of ninteen inspected, contained water which could be described as good. Nine were written down "bad" and "very bad," and two "vile." Surely, as a contemporary remarks, this ought to be sufficient to induce the owners of these disease-breeding holes to fill them up and secure a supply of the wholesome Springbank water.

WE are pleased to be informed that an effort is being made to establish an Art School in Toronto. The Ontario Society of Artists have appointed a committee to that end, and the Architectural Guild have done the same. It is proposed that these committees shall work to the same end, and having the support of the two bodies, there is no doubt but that they will be able to perfect a scheme which will give the city a school which will satisfy a great need. There are many so-called art schools in the city, but they teach very little that can in any sense be considered Art.

WE publish in this number the accepted design for the Confederation Life Association's new building in Toronto; also the report of Mr. J. W. Hopkins, of Montreal, the expert appointed to judge the plans submitted in competition. Eighteen architects entered the competition, a number of whom are residents of American cities. It is gratifying to know that three out of the five prizes offered were awarded to Canadian architects, the first position and the carrying out of the work being given to Messrs. Knox, Elliot & Jarvis, of Toronto, and third and fourth position to Mr. Jas. Balfour, of Hamilton, and Mr. Alfred Flockton, of Montreal, respectively. Messrs. James & James, of New York, carried off the second prize. We are pleased to be able to state that the Confederation Life Association appears to have taken every precaution to secure an impartial decision. This being the case, however admirable every defeated competitor's design may appear to his own judgment, he will doubtless be willing to accept with good grace the verdict that the preferred designs were better adapted to all the requirements.

THE placing of electric light and telephone wires underground, which has lately been commenced in Toronto, will in time lead to a great deal of trouble in several directions unless a change in methods is decided upon. At present each company puts down its own conduit. A pursuance of this system will result in a network of underground conduits, the putting down and repairing of which will necessitate continual tearing up of the streets and make it impossible for the city to maintain good roadways. There is little doubt that it will also lead to conflicts involving questions of right and authority between the various companies using the streets. The present is a proper time for the authorities of Canadian cities to consider the whole question of the best method of conducting electricity. If it is decided that the proper place for electric wires is underground, then we believe it will be found cheaper and far more satisfactory in the end, to provide underground subways of sufficient dimensions to accommodate all the electric light and telephone wires that may ever be required to be used. The underground problem must ultimately resolve itself into this; therefore by

taking a comprehensive grasp of the situation at the present time, endless expense and annoyance will be avoided in the future.

A FEW weeks ago we published a quotation from an English professional journal against the practice adopted by some architects in this country, of putting up notice boards with their names and addresses on the buildings they are constructing. We know a case in which the "architect," not content with this way of advertising, added to his notice board a sentence to the effect that he was a good man to employ because he had the work executed in a remarkably short time, and anyone coming to him would have no tedious delays. Now all this is decidedly vulgar to say the least of it, and it is very different from a custom that exists in England and is advocated in the United States. If a man carries out an important building, and one of which he has a right to feel proud, why should there be nothing to show to generations following who was the author of the design? Every artist affixes his name to his paintings, so that there can be no doubt as to their authorship. The Mayor and Corporation have their names inscribed in conspicuous positions on public buildings erected in their tenure of office, or the president of a company or club and sometimes other officials have their names handed down to posterity, but the architect, whose skill and ability has been put forth to produce the building, is consigned to oblivion. In England where, for an architect to advertise even by a card in the daily papers is looked upon with scorn and as degrading, it is allowable for him to inscribe his name upon the building executed from his designs and under his superintendence, not necessarily in a very conspicuous position, but somewhere where it can be seen, if need be, and then there can be no possibility of another getting the credit that belongs to the author only. In the case of a building whose design has been "cribbed," and we are sorry to say there are not a few of these around us, of course it would be instructive if the architect honestly attributed the success of the design to the original author. We should then see something like this upon our buildings:

"ARCHITECT OF THIS—MR. SO AND SO."

"ARCHITECT OF THE BUILDING OF WHICH THIS IS A COPY, SLIGHTLY MODIFIED—MR. D."

Or, as in the case of one building in particular,

"ARCHITECT OF THIS—MR. SO ANDSO."

"ARCHITECT OF THE BUILDING OF WHICH THIS IS A MODIFIED COPY—MR. THIS."

"ARCHITECT OF THE ORIGINAL BUILDING OF WHICH THE OTHER BUILDING IS A MODIFIED COPY—MR THAT."

But then it is cheaper to insize the first line, and leave it there.

THE demand for vaults opening directly out of offices has resulted as might have been expected in the erection of vaults which are fire-proof in nothing but in name. A tenant considers he must have a vault, and as he does not pay much attention to its character, he is satisfied if it is but a hole in a wall of masonry with an iron door of some kind or other, and fastened with a combination lock. It is rather a difficult matter to say what is a perfectly safe vault; but it has been the practice of careful men to build them at least two feet thick, with an air space, and of a size large enough to stand against any possible destruction of surrounding walls. Such a vault is safe against any ordinary fire, but how far it may be reduced in thickness of walling, or how far it may be reasonable to allow it to depend on surrounding walls for stability, has not been determined. It will be shown before very long, that many of the so called fire-proof vaults now building in our office buildings are not fire-proof. We have only to wait for a fire in some one of these buildings to have it proven beyond a doubt that one-half of all our vaults are being built, first, with walls much too thin to resist the action of an ordinary fire, and second, with too little stability to resist the shock of falling floors or walls. Such vaults might answer in what are generally called fire-proof buildings, but certainly not in buildings of wooden construction. It is a common practice with the object of saving space, to set a vault in the angle formed by two walls, often thinning one or both walls by enclosing a small space with a wall across the angle. The enclosing walls are often ridiculously thin and the vault almost useless as to size. In case of fire it will be worse than useless, as all papers entrusted to its protection will be consumed either through the thinness of its walls, or the inability of the building to withstand the shock of falling floors or walls, and thus allowing the vault to fall or crash sufficiently to render them of no avail against the fire. Vaults thus constructed may cause very serious losses, as tenants naturally look upon them as being safe against fire and will place many valuable documents within them, which if they for one moment suspected the worthlessness of the vaults, they would place where they would be perfectly safe. This matter is so important a one that some effort should be made which will insure that all vaults erected in buildings for rental purposes shall be built to fulfill their purposes beyond any possibility of failure. It may be said that there are few such vaults built or being built. We are convinced that a careful examination of vaults in this city would reveal that many are absolutely valueless in the opinion of competent experts. And as the tendency in all but the most substantial buildings is towards greater elaboration, at the expense of the structural features, the evil is on the increase, and will not be checked unless some disaster happens to show the utter worthlessness of these supposed fire-proof vaults, or supervision in the interests of the public is adopted.

THE first regular Convention of the Ontario Association of Architects will be held in Toronto on the 20th and 21st inst. All arrangements are fully completed, and nothing remains to be done but for each member to be present at the meeting and take an active part in the business brought before it. Papers are to be read of interest to the profession, and it is hoped that every one will prepare himself to take part in any discussion which may arise out of the matters brought up. Each member should consider that he may be able to do the Association much good by rendering such assistance as he may be able. The presence of a member at the meeting is of value, even though he may not express his opinion except in voting. The members should be able to make the attendance at the Convention return them in information and in other ways more than their outlay will amount to. The discussions should be of value to all in giving them some knowledge of how others do work of the same character as their own. To meet with other members of one's profession and derive new and fresh ideas, must be of great benefit to anyone, no matter how high he may stand in his profession, nor how much he may know.

It was determined by the Board of Directors to hold an Exhibition of Architectural Drawings during the Convention, and it is earnestly urged on all members to send such drawings as they may have, and which may be of interest. A Bill to incorporate the Association has been proposed, and will be submitted to the Convention. A copy of the same will be sent to each member, that he may be able to study the Bill and make suggestions for its improvement. This matter is of the utmost importance to the profession and also to the general public, in whose interest the Bill is really prepared. The principal object of the Bill is to insure that all men who may set themselves up to practice architecture shall be competent to carry out any work entrusted to them. As matters now stand, any man may be an architect and forthwith proceed to erect a building which may be dangerous to life through its inferior construction or bad sanitary arrangements. That more deaths have not occurred through badly constructed buildings, is most fortunate. The number who have died as the result of bad sanitary arrangements will never be known; nor will we ever be able to figure up the loss caused by illness that would not have been if someone had not meddled where they had not the knowledge. Every one should be present to aid in this matter, as the profession and each member are deeply interested. The officers and members of the Association resident in Toronto have determined to entertain the visiting members at a dinner to be held on the evening of the second day. All members should strive to be present at the dinner, as much is to be gained by such social gatherings. In any case, the members will render much assistance by letting the Secretary know whether they will be able to attend or not, as definite arrangements must be made in relation to the number who will be present. Let no one stay away because he may consider that his absence will not be noticed. In numbers their is enthusiasm, and in enthusiasm there is energy.

ONE of the most peculiar of the many strikes on the part of workmen in the building trades in Toronto, is at present in progress. The stonecutters in the employ of R. Snarr & Co., recently quit work owing to alleged unfair treatment accorded to them by Mr. Hobson, the foreman, whose dismissal they demanded. This Mr. Snarr refused on the ground that Mr. Hobson was admitted a partner in the business at the beginning of the year. Partnership articles were produced in proof of this statement. The workmen had not been aware of Mr. Hobson's relationship to the firm, and it was expected that when the situation was explained to them, they would withdraw from the position they had assumed. Not so, however. They refused to believe that the partnership was anything more than a hastily concocted scheme to deceive them, and took the more advanced ground that whether he was a partner or not, Mr. Hobson must be sent about his business. Strange to say, this most unreasonable demand was endorsed by the Stonecutters' Union, and by the Bricklayers', Plasterers', and Laborers' Unions, the members of which have all combined in refusing to work upon any building where stone from Snarr & Co's. yards is used. As the firm thus boycotted have hitherto supplied a large proportion of the cut stone used in buildings in this city, great inconvenience and loss will be inflicted upon a large number of persons who had no connection whatever with the matters in dispute. We understand that Messrs. Snarr & Co. have determined at whatever cost to fight the unreasonable demands of the labor unions. That they are justified in so doing there can be no question, and we trust that they will receive the sympathy and assistance of every man who believes that reason and fair-play should actuate the conduct of men, whether employers or employees.

It would be amusing under other circumstances, to observe the way in which the master builders, when some trouble of this kind confronts them, seek to hurriedly whip their organization into working order. Their success is not always what they could desire, and no wonder. "In time of peace prepare for war," is a wise policy, but one which the master builders appear to have systematically disregarded. In time of peace they have acted on the go-as-you-please, every-man-for-himself plan. In time of war, as in the present instance, they perceive how helpless they are individually, and try to unite their scattered forces. How much wiser it would be to institute and maintain constantly, as do the labor unions, a perfect organization, equipped by strength of numbers as well as financially to defend successfully their rights. The labor unions have never before to our knowledge gone so far as to demand the disruption of a business partnership under threat of a boycott. Emboldened by the concessions granted to them from time to time by the employers, they are becoming more and more unreasonable and arbitrary in their demands, and unless a severe check is shortly administered to them, the term "master builder" will no longer serve to designate the employer in the building trades. It is abundantly clear that the unions do not propose to be satisfied with what men of reasonable judgment would regard as their just due, but intend to work on the principle of getting all they can, without stopping to consider whether the employer has any rights which ought to be considered. Owing to lack of proper organization on the part of the employers, their efforts along this line have so far proved fairly successful, and we may add that they are pretty certain to eb so, until such time as the employers are prepared with a firmer hand to resist their unjust claims. We have repeatedly urged organization with this object, but without success. The signs of the times all point to the fact, however, that if the employers are not to become the victims of a most galling tyranny, they must speedily take such action as will enable them to hold their own in the constantly recurring conflicts with organized labor.

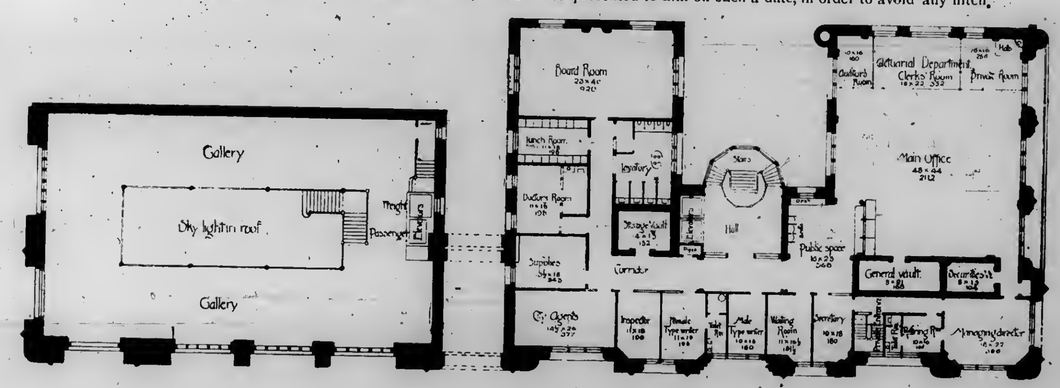
IT is a matter of surprise and disappointment to us that we have received drawings from only two persons in connection with the competition for a serving pantry announced in our issues of September and October, and neither of them is good enough to illustrate. One design has many good points, but is defective in other respects, and does not fairly represent the average work in serving pantries in our better houses. The sink is shown enclosed, which is never done in any house erected under the direction of a capable or well-informed architect. The other design has apparently been prepared by a designer of furniture, and misses the mark entirely. One would judge from the design submitted that a serving pantry answered no good purpose except to afford a means of decorating the walls with cabinet work. A serving pantry should above all things serve its purpose, and there should not be the least amount of elaboration. A pantry should easily be kept clean, and that cannot be done where there are a lot of small and useless mouldings and unnecessary fixings. The series of competitions of which this one was the first, were largely instituted for the purpose of stimulating effort on the part of architectural students. It was thought that students would be quick to embrace the opportunity of measuring their ability by a comparison of work with a number of others in the same field. Accordingly the prizes were made nominal, being offered rather for the purpose of giving definiteness to the competition, than as a reward of effort. A sufficient, as well as the highest reward in such a competition, is that which comes from putting forth one's very best efforts to excel. It is far from being creditable to the architectural students of Canada that not one of them appears to have regarded the matter in this light. If their apathy towards this competition designed to encourage them to make progress in their studies, is an index of their interest in the profession, we must confess we have fears for the future of architecture in this country. If they do not propose to work, why have they entered a profession which requires work of its members beyond the capabilities of the most able? Do they propose to depend upon their ability to make a living by means of scheming, trickery, humbug and dishonesty, rather than by good, straightforward, honest effort? If they do, the sooner something is done to force them to change their methods the better. Occasionally architects are blamed because some of their members make no effort whatever to meet the ordinary requirements of civilization. Is it any wonder, when the students and afterwards architects in name only, care not whether they are competent or incompetent so long as they are able to squeeze out of this world an existence by honest or dishonest means? Two years ago the draughtsmen of Toronto formed an Association and held weekly meetings. Success attended the movement for a time, but when two or three of the active members graduated into the ranks of the profession, it went down and down, until to-day it is out of sight in the darkness of the total indifference of the draughtsmen of the present time to all information requiring effort and hard, persistent work. It is time that the students should do something to aid themselves, and likewise time that architects made an effort to get their students to semi-occasionally open a book and gain some knowledge from its pages. We take this opportunity to announce that if the next two or three competitions of the series arranged for, are no more successful than this one has been, we will discontinue them. We regret that the report of the Committee appointed to judge this competition has not yet been received. It will appear in our December issue.

A suspected joint in a sewer or drain pipe may be tested by wrapping it with a single layer of white muslin, moistened with a solution of acetate of lead. As the gas escapes through the meshes of the cloth, it will be blackened by the sulphur compounds.

THE RELATION OF AN ARCHITECT TOWARDS CONTRACTORS.

By G. F. Stalker.

THE "divided duty" of an architect (referred to in the October number of the CANADIAN ARCHITECT AND BUILDER), commences with the signing of the contract. This in fact is the introduction of the contractor to the proprietor and architect: to the proprietor, as to the one for whom he is about to execute certain work; to the architect, as to the one from whom he is to receive his instructions for that work, and whom he is willing to accept as the judge between himself and the proprietor. This is an important point to be understood at the very outset of the negotiations. A contractor is not bound to enter into a contract to erect a building, or even to tender for it if he is not satisfied with the ability and impartiality of the architect who has been engaged to prepare the drawings and specifications. But, having tendered for the work, and having signed the contract for it, it is altogether unreasonable that he should afterwards raise objections to the decisions and requirements of the architect, unless they are manifestly unfair. It is a common impression among contractors, that the architect is bound to get as much out of them for the proprietor as he possibly can; and so will require them to do work far in excess of that they have contracted for. On the other hand, proprietors often imagine that architects and contractors are in league together, that the work will be "scamped," and the vultures share the spoil between them. What a pleasant position this is for a gentleman to be in! Does it never occur to the minds of proprietors and contractors that it is equally repugnant to the moral sense of an architect to exact more or less than is agreed upon, either for the benefit of one or other of the contracting parties? That there have been instances where proprietors on the one hand, and contractors on the other, have been improperly treated at the hands of the architect, it is, unfortunately, necessary to admit. But such instances are by no means common. The principle of fair dealing may be said to be almost inoculated into architects, and any divergence from that principle may safely be considered a kind of freak. Contractors, therefore, will act wisely, when they have signed a contract, to leave themselves in the hands of the architect, trusting to his impartiality in carrying out the building. But there are certain things which they have a right to expect of him, and which it is his duty, both to the proprietor and the contractor, that he should do. And, further, the doing of these things places the architect outside of the complaints of either party, and renders him independent of both.



Plan Accompanying Accepted Competitive Design for Confederation Life Association Building.

On the signing of the contract, the architect should hand to the contractor the copies of the contract drawings and specifications. In cases where there are several contractors, it is impossible that each can be supplied with a complete set of drawings and specifications. Arrangements, however, should be made whereby the several contractors can at all times have access to them. They should never be off the works from the commencement till the completion. There should follow, always well in advance of the work, such portions as are specified to be done according to details. It is the custom in many offices in the old country to have these details prepared and copies made of them immediately after the contract is signed, so that the contractor is never kept waiting for them. Other details of course may be required which cannot well be prepared so far ahead, but which, nevertheless, should be given as soon as they are wanted. By this means the architect will perform his duty towards his client, and give the contractor every opportunity of proceeding with the work expeditiously, and without cause of complaint.

But the "sinews of war" must also be provided, and so progress estimates must be given at stated intervals. Unfortunately the relations between the architect and the contractor are often strained in regard to this matter. Naturally the contractor will be anxious to get an estimate for as large an amount as possible, while the architect is, in many cases, inclined to keep back more than is necessary or right. The better plan is, before the work is commenced, for the architect and contractor mutually to agree upon an equitable basis for progress payments, and to stick to that throughout. It is also advisable that the proprietor should be apprised beforehand that a certificate will be presented to him on such a date, in order to avoid any hitch in regard to its payment.

As the building proceeds, the contractor is sometimes tempted to suggest changes here and there. An architect, however, must allow of no interference either with plans or specifications. His thinking has already been done, as far as they are concerned, and he now occupies himself only with seeing that they are faithfully carried out, and the contractor must be given to understand this most clearly. He must also have it made clear to him that, as is sometimes done, to suggest any change or "improvement" to the proprietor, he is going altogether out of his sphere. His business is to carry out what he has agreed to carry out, and the architect's business is to see that he does it. Any alteration of the plans or specifications, must only be made at the suggestion of the proprietor or the architect, and for which the contractor must have the authority of the architect in writing. It is most important that contractors should know and act up to this, and that they should insist upon receiving such written authority before carrying into effect any alterations. And in all cases, where it is possible, the architect should obtain in writing from the contractor the amount to be added to or deducted from the contract sum, by reason of the proposed change. A strict adherence to this is the only sure way to avoid disputes and delays at the settlement.

Then, in carrying out the work, the contractor has it in his own hands to prevent any breach of good relations being maintained between himself and the architect. The work has been specified to be done in a certain manner, and materials of a certain quality have been called for. Now it is impossible for the architect to be always on a building and to see all the material that is put into it. It is left, therefore very much to the honour of the contractor to carry out this part of his bargain honestly. To take advantage of the absence of the architect, and put in inferior stuff, and cover it up before he can see what has been done, every contractor knows is a dishonest trick. He also knows that if an architect does his duty by his client, he must be rigid in regard both to the proper, workmanlike performance of the work, and to the quality of the materials used. It has vexed the soul of many an architect, when he has discovered the want of good faith in this respect. And who shall blame him if in his indignation he has uttered as vigorous an anathema as did Pope Gregory to Sir Ingoleby Bray, using in less measured terms, his closing words,

> "Come bring me a book, come bring me a bell
> As big as a dustman's, and a candle as well,
> And I'll send him—where good manners won't let me tell."

If an architect is expected to act in a fair and honorable manner towards contractors, they must also carry out their work with perfect honesty. At the same time, although the statements here made apply to a large number of contractors, they are by no means of general application. There are many contractors who would rather work at a loss than be guilty of any dishonorable practice. At the completion of a building, if matters have proceeded as they ought to have done, there should be very little trouble in winding up the accounts to the satisfaction of all parties. Written orders must be produced by the contractor for all claims for extra work; and where no previous agreement has been made as to the cost of such work, then the architect must give a fair valuation for it. And here again, it must be repeated, that it would greatly simplify this part of the transactions if the system of tendering by bills of quantities were generally adopted. It may not be long before such a system comes into use, and the sooner it comes the better for all concerned. The price to be charged would then in the majority of cases be a foregone conclusion, and would have to be allowed without demur, while, by the process now in vogue, there is sure to be more or less discontent on one side or the other. But when an architect is satisfied with amount charged in the final account, and that the work has been done to his satisfaction, he should not withhold by a day longer than is necessary his final certificate. He should remember that the contractor has to meet his legitimate payments for material that has been used in the building, that he has had to pay wages, and that any unnecessary delay in giving a final certificate to the contractor, is a dead loss to him.

FOR COPYING DRAWINGS.

A NEW method of copying drawings which may be found of service in architects' offices, is given in the *Deutsches Baumgewerbes Blatt*. Any kind of opaque drawing paper in ordinary use may be employed for this purpose, stretched in the usual way over the drawing to be copied or traced. Then by the aid of a cotton pad, the paper is soaked with benzine. The pad causes the benzine to enter the pores of the paper, rendering the latter more transparent than the finest tracing paper. The most delicate lines and tints show through the paper so treated, and may be copied with the greatest ease, for pencil, Indian ink or water colors take equally well on the benzinized surface. The paper is neither creased nor torn, remaining whole and supple. Indeed pencil marks and water color tinting last better upon paper treated in this way than on any other kind of tracing paper, the former being rather difficult to remove by rubber. When large drawings are to be dealt with, the benzine treatment is only applied to parts at a time, thus keeping pace with the rapidity of advancement with the work. When the copy is completed the benzine rapidly evaporates and the paper assumes its original white and opaque appearance without betraying the faintest trace of the benzine. If it is desired to fix lead pencil marks on ordinary drawing or tracing paper, this may be done by wetting it with milk and drying in the air.

OUR ILLUSTRATIONS.

RESIDENCE, MONTREAL, NOW APPROACHING COMPLETION—ANDREW T. TAYLOR, F. R. I. B. A., AND G. H. GORDON, ARCHITECTS, MONTREAL.

ACCEPTED COMPETITIVE DESIGN FOR CONFEDERATION LIFE ASSOCIATION BUILDINGS, TORONTO.—MESSRS. KNOX, ELLIOT & JARVIS, ARCHITECTS, TORONTO.

CANADIAN MANUFACTURERS' ASSOCIATION COMPETITION FOR AN $800 WORKMAN'S COTTAGE.—SECOND PRIZE DESIGN BY C. H. ACTON BOND, TORONTO.

"CANADIAN ARCHITECT AND BUILDER" SERIES OF PRIZE COMPETITIONS.

THE following is a list of competitions in Architectural subjects which we have decided to hold during the winter:—

1st.—Plans of a serving pantry, 100 square feet in size, showing cupboards, shelving, etc., with details of same. Plans to be sent in on or before 1st November next. First prize $5; second, one year's subscription to CANADIAN ARCHITECT AND BUILDER.

2nd.—Designs for three plaster cornices of 20 inches, 25 inches and 30 inches girth; and of three centre pieces of 15 inches, 20 iaches, and 25 inches diameter. Drawings to be sent in on or before 1st December next. First prize, $5; second, one year's subscription to CANADIAN ARCHITECT & BUILDER.

3rd.—Essay on Plumbing. Essays to be sent in on or before 1st Jan. 1890. First prize, $10; second, one year's subscription C. A. & B.

4th.—Designs with details for a verandah running across the front of a house 40 feet wide, and an outside wooden porch to a front door. Designs to be in on or before 1st Jan. 1890. First prize, $5; second, one year's subscription C. A. & B.

5th.—Designs with details for front doors and vestibule. Designs to be sent in on or before 1st Feb., 1890. First prize, $5; second, one year's subscription C. A. & B.

6th.—Details of the interior of a small house to include those for staircase, doors, architrave, base and windows. Designs to be sent in on or before 1st March, 1890. First prize, $10; second, one year's subscription to C. A. & B.

7th.—Design with details for four mantels, two of wood, one of brick and one of stone. Designs to be sent in on or before 1st of April, 1890. First prize, $5; second, one year's subscription to C. A. & B.

8th.—Three designs with details, for front fence. Designs to be sent in on or before 1st May, 1890. First prize, $5; second, one year's subscription to C. A. & B.

9th.—Essay on Heating and Ventilation. Essays to be sent in on or before 1st May, 1890. First prize, $10; second, one year's subscription to C. A. & B.

10th.—Plan of a bath room for a medium sized house, showing the best position of fixtures; not more than five fixtures to be shown, or more than 75 square feet devoted to the bath room. Plans to be sent in on or before Jan 1st, 1890. First prize, $5; second, one year's subscription C. A. & B.

The Architectural Guild of Toronto have very kindly appointed a committee from their number to judge the above competitions. We shall publish each report as sent to us by the committee. Draughtsmanship, neatness and clearness of arrangement of drawings will be taken into consideration in awarding positions.

Drawings must be made on sheets of heavy white paper or bristol board, 14 x 20 inches in size, and must be drawn to allow of their being reduced to one-half the above size. Drawings must be made in *firm strong lines*, with pen and *black* ink. No color or brush work will be allowed.

Each drawing must be marked with the *nom de plume* of its author, and the author's name, *nom de plume* and full address, enclosed in sealed envelope, must accompany each drawing sent in.

We reserve the right to publish any design sent in.

Drawings will be returned to their authors within a reasonable time after the committee has given its decision.

"HOW TO ESTIMATE."

HAMILTON, Nov. 6th, 1889.

Editor CANADIAN ARCHITECT AND BUILDER.

IN studying out the rules and directions for the measurement of stone work given by "Cato" under the above heading on page 115 of the CANADIAN ARCHITECT AND BUILDER for October, I am sorry to say that it must be apparent to any practical man that "Cato" labors under a very serious mistake when he says that "a perch of stonework measures 16½ feet long, 1½ foot wide, and 1 foot high," for such is not the case. A perch of stonework measures 11 ft. long by 1½ ft. wide by 1 ft. high, making 16½ cubic feet in the perch, and not 24¾ feet, as "Cato" says.

"Stone walls are generally measured by the perch, as it is called a perch of stonework, being 16½ cubic feet."—*See Johnston's Arithmetic, page 43.*

Please correct the mistake, which may be perplexing and misleading.

Yours truly, COMMENT.

CONFEDERATION LIFE ASSOCIATION BUILDING COMPETITION—EXPERTS' REPORT.

TORONTO, October, 19th, 1889.

J. K. MACDONALD, ESQ.,

Managing Director, "Confederation Life Association," Toronto.

DEAR SIR,—In accordance with instructions, I have made a careful examination of the eighteen designs submitted in competition for the proposed building to be erected by the Confederation Life Association in this city, and beg to report,—that in order to arrive at a fair and proper consideration of the merits of the respective designs, I decided that the "Conditions and Instructions" issued by the Association for the guidance of competing architects ought and were intended to be strictly carried out by them, and also should at the same time be a guide to myself in forming due opinion upon the merits of each design.

On the 11th inst., I proceeded to examine and compare the drawings, which were in portfolios each bearing a distinguishing motto or cypher. The sealed envelopes containing the names of the authors were handed to you un-opened, and are still in your possession.

After a thorough and careful comparison of the designs, I eventually selected five, as in my opinion the ones which the most closely complied with the "Instructions," and which I also considered the most suitable for the intended building.

Out of these five, the design bearing the motto "Lux" appeared to me to be in all respects the best, and for the following reasons, namely: all the requirements contained in the "Instructions" have been carefully carried out, and the drawings have been prepared with considerable skill, and fully express the intention of their author.

The buildings, i. e., the main or Association's, and that forming the shop on Yonge street, are not only distinct in themselves, but to a great extent entirely separate, having a passage-way of fifteen feet in width between them, excepting a portion of sixteen feet by thirty-two feet on the upper floors on Richmond street, over the archway on the first floor. There is however no connection between the two buildings at any point, and in consequence of this arrangement, light is obtained on all sides for the main building, as well as on three sides for the shop, whilst the risk from fire in either building is very materially diminished.

The main office will be a lofty well-proportioned room, thoroughly lighted, having a frontage on Victoria street, as well as having windows on the lane in rear, and on the open space on the west side.

The basement, which is entered from the street level, as well as the upper floors are laid out in such a manner as to obtain abundance of light and air, and whilst being ample in size are suitable for tenants requiring single, or offices in suites of useful dimensions.

The attic story has been laid out in a manner which will probably prove a source of revenue, should it be leased for the purpose indicated, where otherwise the space in the roof would be lost.

The exterior of the building is of a very pleasing and distinctive character, and shews at a glance the purpose for which it is intended, namely, a public institution, and at the same time a commercial building.

The shop on Yonge and Richmond streets, whilst distinct in itself, harmonizes with and forms a portion of the whole structure. (It is a question for consideration whether a lighter appearance could be obtained on the Yonge street front ground floor, without injuring the effect evidently aimed at by the designer, viz.; that of solidity of base, for the superstructure, by altering its size or increasing the number of the openings on that street.)

Several of the other designs submitted are very meritorious, and give evidence of great painstaking thought in the arrangement of plan, and in character and expression in the elevations. It has been no easy task to determine in my own mind the order in which the three other recipients of prizes should be placed, one design possessing what in my opinion the other lacked.

The drawings submitted by "Business," "Ajax," "Utility," "Observanda," "Practical," "Dominion," "Simplex," "Ici," and "C. L. A.," all possess considerable merit. However, after mature consideration, I have concluded to submit the following, and in the order named, for the second, third and fourth prizes, to the judgment of the directors, as having adhered the most closely to the "Instructions," and laid out the site of the intended buildings to the best advantage, viz:

"BUSINESS."
"OBSERVANDA."
"UTILITY." }
"AJAX." }

With reference to the above I would remark that "Observanda" has the principal tower on the corner of Yonge street, on the leasehold property. This is the only design having this arrangement, which, however, is not proscribed by the "Instructions."

With regard to "Utility" and "Ajax," bracketed together, I am of opinion that to carry out the latter with the tower, as shown on the "flap" on Richmond street elevation, and "perspective sketch" would materially exceed the sum named as the limit of expenditure, and without the tower, a principal feature in the design, the latter would lose one of its salient points of attraction.

Having examined with equal care the whole of the eighteen designs submitted in competition, I have deemed it well to give the Directors a brief synopsis of the notes which I made seriatim upon each during my examination thereof:

"FIAT JUSTITIA RUAT CŒLUM."—The main, or Association's building, is separated by a party-wall from the leasehold, or shop portion of the edifice. The main office fronts on Richmond street, and would thus have good light, but the mode of access by the public to the Manager's and Secretary's offices is objectionable, inasmuch as they would have to pass between the windows and the clerks in the main office. There is no "retiring room" for the manager, nor any fireplace in his room. Basement offices are below the street level, and reached by areas, involving loss of space. Entrance to the main office possibly objectionable. Elevations not particularly novel or specially attractive. All requirements as to number of drawings have been complied with.

"UTILITY."—The freehold and leasehold portions of the buildings are distinct throughout. The main office fronts on Victoria street. Access to it and other offices of the company is obtained from a large central hall, in which is the main staircase leading to the offices on the upper floor. The shop on Yonge street is of ample size, but it is questionable whether the height of the ground floor is sufficient for the size this is designed to be, unless by opening up the large well-holes in the floors, which are shown on the plans but not on the section. Externally, the design gives an appearance of a very lofty shop, the windows of the two lowest stories forming apparently one. Access to the offices in basement under the company's portion is gained from the street level by means of some steps inside the several rooms. Two shops are contemplated on Richmond street in the main building, whereby considerable revenue might be realized, a point worth consideration. This design exhibits a good deal of taste in the exterior, and the drawings are very carefully made, and full as to the number required by the "Instructions."

"PRACTICAL."—Submits the proper number of drawings, etc. His buildings are distinct throughout. The intention is to enter from Victoria street for the offices over the Association's portion, keeping the latter with its entrance from Richmond street entirely separate. The main office fronts to the rear, so to speak, having three large windows thereon—four on two open areas on each side. The Secretary has not the supervision of the public at the counter to the desired extent. The basement under the Association's offices is not utilized to the extent that it could be were the ground floor raised sufficiently to admit more light and easy access given to the basement, as asked for in "Instructions." The elevations are plain, but sufficiently broken up on Richmond and Victoria streets to give effect. The entrance on the former is relieved by carving, but the canopy over it looks somewhat heavy in the perspective sketch. The type writers have not the full space asked for, 133 feet, instead of 150 feet.

"PELICAN."—Submits the requisite number of plans, but only one section (a cross), rendering it somewhat difficult to discover how he proposes to finish the main and other offices, the section being also of the plainest description, exhibiting no detail whatever, and the short memorandum accompanying the plans being of the briefest kind. In the plan of the Association's offices the route from the entrance for the public to the main office is very circuitous, and the Secretary has no supervision of the counter. The elevations are very plain in character, and the effect of building a rough-faced stone tower over the brick facade below it, is very questionable. The buildings communicate on three floors, having offices on each.

"PAID UP POLICY."—The buildings communicate above ground floor. Main office is in the rear, and the greatest portion of both street fronts is taken up by subsidiary offices, and supply-room, &c. Elevations plain in character; stone up to first door, brick above with stone lintels in windows. Flat roof throughout. One section only submitted.

"LUX."—See "ante" respecting first prize, &c.

"UTILITY"—Submits plans &c., as required by "Instructions," but has not followed them sufficiently closely, as he has not given the number of square feet in each room on his plans. He sends a separate memo in his description of the room areas in square feet. The Secretary's office does not face on the space for the public, and would have to traverse the whole of his room to reach the Manager, leaving the Secretary no space for himself. There is no retiring room in connection with the Manager's room as required. Main office fronts on Victoria street, and depends for additional light on the glazed dome in the ceiling. There are two wells to light offices above. The elevations are good, and have a pleasing effect.

"OBSERVANDA."—Submits all drawings, &c., required. The buildings communicate above the first floor. The main tower is on the leasehold property, a possible objection, as it is one of the most expensive portions of the building. The entrances, of which there are two on Richmond street, are not sufficiently important in appearance, and the one between, to the basement is too low. The main office fronts on Victoria street, and the portion alloted to the public may be dark. Corridors to upper floors &c., over shop, insufficiently lighted. Elevations good, excepting entrances, &c., above named. The towers are apparently not utilized in any way, but might be made available.

"BUSINESS."—Submits all required drawings and description. The main office is on the angle formed by Richmond and Victoria streets. Plenty of light and height. An entrance from Victoria street. Basement to offices on the ground floor and to upper stories by a central staircase is provided, as well as a general entrance from Richmond street, and a separate one to Association's offices on same street. Basement Victoria street, vault foundations come somewhat in, the way in one store. Offices on upper floors somewhat short of vaults; six only on each floor. The buildings are distinct, separating the leasehold from the freehold portion. The area occupied by the Association's offices is not as large in this design as in most of the others, and the cost would therefore be relatively less. The elevations are effective without being costly, this being due in a great measure to the importance and richness given to the several entrances.

"SIMPLEX."—Submits number of plans, &c., required. The buildings are distinct up to the top floor, where there is an opening, and offices are proposed on this floor, over the shop portion. In the main office the space for the public is too large, and the Secretary does not oversee this space. I am afraid there might be a deficiency of light, excepting from the skylight, which is over a portion of the office, and that not in the centre. The carrying of the corridors to offices over the main office on piers would impinge upon the upper portion of the office, and tend to intercept the light from the side windows to a certain extent. The janitor's rooms are not well placed, and have only one outside window to three rooms. This might be remedied in execution. In the basement there is no communication between the offices and the elevators, and no staircase appears to give access to the tower. Access to basement offices from the street is by outside steps. Elevations plain but of a pleasing design and main entrance good.

"ICI."—Submits the necessary number of drawings, but gives the number of cubic in place of the number of square feet in the several rooms. The main office fronts partly on Victoria street, and on rear lane. There would be an insufficiency of light at the public entrance to this room, and the hall and corridor would be very dark. The same remark applies to the restaurant, &c., in the basement, and the halls and corridors on the upper stories. The elevations of the main building are of neat character, the entrance presenting a good appearance; but the flank of the shop on Richmond street is very plain and commonplace. The buildings are distinct. Entrance to the basement offices, &c., are a few steps below street level inside.

"AJAX."—Furnishes all the required drawings and descriptions of his design. The buildings are distinct throughout. This is a very carefully prepared set of drawings. The main office fronts on Victoria street, and derives additional light from a domed ceiling-light. The type-writers' and lunch room occupy a considerable portion of the two principal fronts, which is not desired. The space occupied by the public is larger than is asked for. The main entrance hall and staircase have no external light on the basement and ground floors, and depend entirely upon a skylight on the ground floor. The basement entrance and rear portion of the restaurant would be positively dark were it not for a portion of the floor of main office being glazed to admit light to the basement, and this would be a very questionable expedient. The basement floor is four feet below the street level. The Manager's retiring room appears to be too narrow to be of much practical utility. The Secretary's office having three doors in it, would oblige him to sit in the darkest portion of it. The elevations are to

RESIDENCE FOR HON. G. A. DRUMMOND, MONTREAL, QUE.

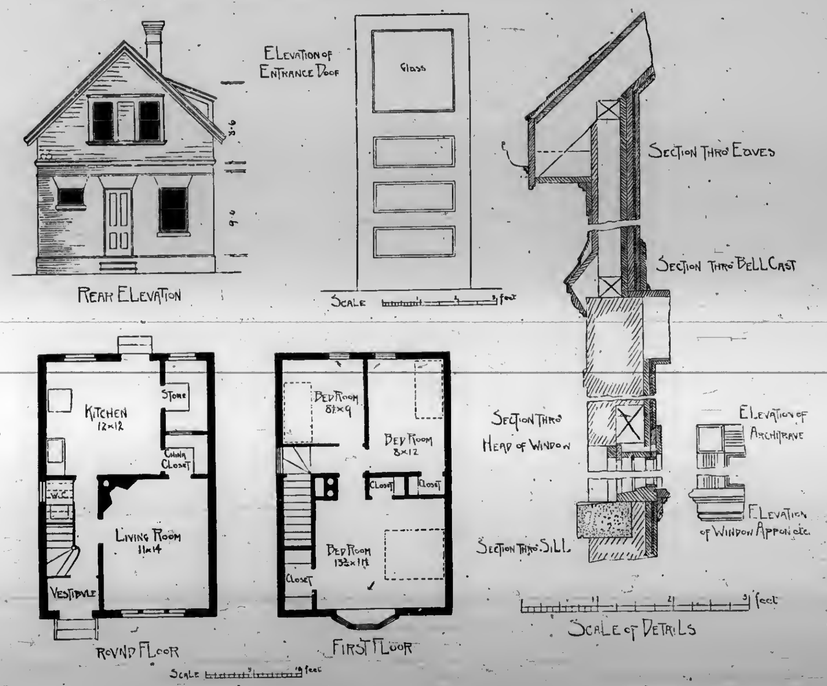
SUPPLEMENT TO
CANADIAN ARCHITECT AND BUILDER
VOL. 2, NO. 11.

ANDREW T. TAYLOR, F.R.I.B.A.,
AND G. H. GORDON, ARCHITECTS.
MONTREAL.

CANADIAN MANUFACTURERS' ASSOCIATION

COMPETITION No. 10

Design for an $800 Workman's Cottage by "English bond"



SECOND PRIZE DESIGN.

By C. H. Acton Bond, Toronto.

RESIDENCE FOR HON. G. A. DRUMMOND, MONTREAL, QUE.

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Perspective View

CANADIAN MANUFACTURERS' ASSOCIATION

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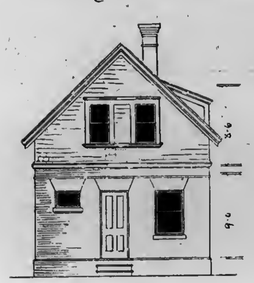
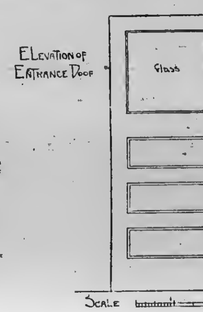
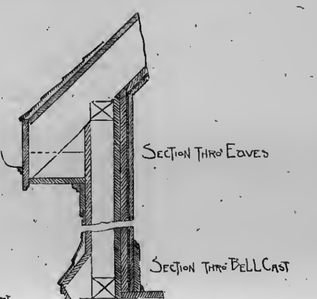


Rear Elevation



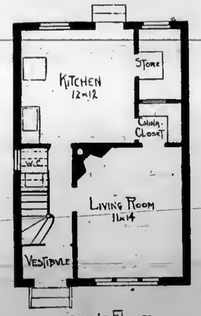
Elevation of Entrance Door

Scale

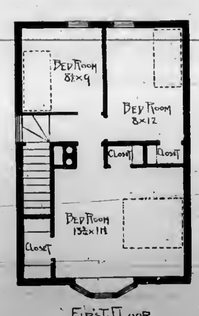


Section Thro' Eaves

Section Thro' Bell Cast

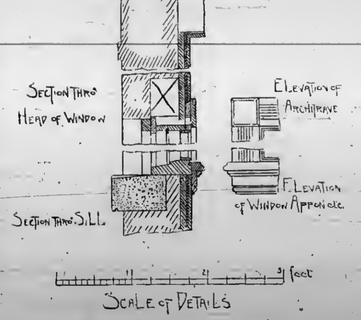


Revnd Floor



First Floor

Scale



Scale of Details

SECOND PRIZE DESIGN.

By C. H. Acton Bond, Toronto.

be of stone. They are substantial in character and good in design. The entrance to the company's offices is massive and in good proportion, but the tower shown by a flap on the Richmond street elevation and on the perspective drawing, would have to be dispensed with on the score of expense, and it is this tower which gives most expression to the design. The main portion of the building is six stories above basement, and has a very high pitched roof, in which the sixth story is formed. The roof over the shop is flat, and hardly harmonizes with that of the main building. Query—Is a restaurant in basement an advantage or otherwise in a building such as this would be?

"DOMINION."—Sends required number of drawings. The buildings are distinct. The main office fronts on Richmond and Victoria streets, entrance to basement from street level. The main office is well situated for light, but the arrangement of the vaults and window openings would not make a good feature, and the breaks also in this room are not pleasing. There appears to be a want of sufficient light in the hall, which depends in a great measure upon a skylight sixty-five feet above the ground-floor ceiling. In the basement corridor there would be a great want of light. The elevations are neat and substantial. The two entrances to main building might have been varied somewhat in treatment with advantage, by giving more importance to the one leading into the Association's own offices.

"INTEREST."—Submits one elevation only, and no perspective view, and has consequently not carried out the "Instructions" given to competitors. A considerable portion of the frontage on Richmond and Victoria streets is taken up by subsidiary offices. For the reason given above, namely, neglect to comply with instructions, this design is disqualified.

"TWO CIRCLES, ONE WITHIN THE OTHER."—Submits a considerable number of plans, original and alternative ones, but has not completed the perspective drawing, it being unfinished and partially only in pencil, and thus fails to carry out the "Instructions." In the original plan, the arrangement of the main office is not at all in keeping with the requirements of the Association, being cut up into separate portions wanting in light and accessibility. The basement is below ground. The alternative plan of the Association's offices is better in arrangement than the above, but is not satisfactory, and the elevations have no special features denoting the purposes for which the buildings are intended.

"A GOOD INVESTMENT."—Submits a number of drawings, among them three "alternative elevations" two plans, and part of a skeleton section. These alternative drawings are not sent in as required by the "Instructions," viz., bearing a different motto or cypher, and there is no finished perspective. No complete section is furnished in either case. In the first original set, part sections through main offices and hall, are only given. The buildings are distinct on the basement and ground floors, above that the offices are carried over the shops. The general office is lighted from the lane in rear by a skylight in ceiling, which also lights the public corridor. Staircase on ground floor would be dark. The greater portion of the street frontages is taken up by typewriters, lunch and other rooms. For reasons given above, alternative plans and elevations cannot be entertained, and for want of proper sections and perspective the original design becomes disqualified.

"1890."—Submits plans and sections, two elevations (Richmond and Victoria streets—none for Yonge street), and perspective. Also two alternative elevations on Richmond street, over the same motto, without the drawings which should accompany them, as requested by the "Instructions" in such cases. The latter therefore cannot be considered as being in the competition. In the original or first design, the buildings are distinct. Basement four steps down from the street level. The main office is lighted from the lane in rear. The Secretary's office is too large, and does not face on the space for the public, and the Manager has no retiring room. The typewriters and two lavatories occupy a considerable portion of Victoria street front. The lavatory for clerks is not well placed, being between the main office and the Actuarial Department. Elevations are plain, basement and ground floors of stone, above them brick and terra cotta and stone dressings. The entrance from Richmond street is bold and well-proportioned.

"C. L. A."—Submits the required drawings, excepting a cross or transverse section. The buildings are distinct in basement and on ground floor only. Offices are carried over the shop on all the upper floors. The main office is in the centre of the block, having large banking or other offices between the portion to be occupied by the Association and Victoria street. The main or general office would be lighted from a yard or space in the rear which is widened to twenty-one feet including the lane. The Manager has no retiring room and his private entrance is likely to be somewhat dark, as would also be the storeroom adjoining. The Secretary's office does not face on the space for the public as desired. The offices in basement, with one exception, are cut off from the elevators, and they are three feet six inches below the street level. As regards the elevations, they are very effective. The tower which is a prominent feature in the design, gives a great deal of character to the edifice, but would be an expensive item. If dispensed with, the want of it would materially diminish the attractiveness of the design. Sufficient thickness of walls to sustain a tower one hundred and eighty feet in height to the cornice does not appear to have been calculated upon in preparing the plans, but this would of course be looked to by the architect in carrying out his work. The space occupied by the building, the style of the work externally, and the carrying out of the tower as contemplated, would possibly make the building exceed materially the sum named in the instructions.

I am, very respectfully,
Your obedient servant,
(Signed) JOHN WM. HOPKINS,
Architect.

ART INSTRUCTION.

Editor CANADIAN ARCHITECT AND BUILDER.

THE Toronto Art School is again making an effort to impress the public with its very great value to the community. Its President is out with a statement of what they propose to do, all of which is proper and to the point. But the truth is that it is much easier to impress the public as to what should be taught than to teach it. The school has affirmed that art should be taught, with which we agree, but then the school will persist—we suppose in its ignorance—in not teaching art, and subsequently it finds it necessary to make strong appeals for assistance. If the school was making any attempt to fulfil its professed mission, persons interested in art would be only too glad to render any assistance in their power. Instead of doing good, however, it is doing much real harm; for it is turning out students with the crudest ideas of art, and an overwhelming amount of conceit. Only those schools which teach painting in a certain number of lessons can compete with it with any hope of success in the turning out of artists according to rule.

It is now time that this school should be taken out of the hands of its incompetent directors and placed under a management capable of directing its powers aright. This must be done, or an effort made by those who would like to see art taught, to establish an art school which would really impart art instruction.

Yours truly,
LOVER OF ART.

HOW TO ESTIMATE.

BY "CATO."

IN estimating the cost of labor in masonry, measure the length of the entire wall outside. The corners will be measured twice, but the extra cost of building them, in bonding, etc., counterbalances this gain. Make no allowance for doors and windows in figuring for labor, unless it be specially mentioned by the architect, in which case it is usual to allow one-half the space actually required; but in estimating material, allow for all, viz., doors, windows and corners, as it may make a serious difference in the quantity, if there be many openings. Add whatever additional cost may be incurred for pointing, laying in cement, or any other special work which the specification may call for. Ascertain from the quarry, if it be convenient before figuring up, how much stone will constitute a perch and its cost per cubic yard, perch or foot, and add the 2.75 cubic feet for mortar and filling.

Special work will of course demand a special price, therefore, care must be taken and a thorough examination made of the specification and details, so that the work may be understood to the letter, and its actual labor and material figured on. For example; rubble masonry in foundations will cost approximately from 17 to 20 cents per cubic foot, according to the thickness of the wall, whereas the same wall built of large stone with the joints vertical, oblique and horizontal, filling close, will cost nearly twice as much. The design and manner ought then to be well studied, and a price sufficient to cover its cost, with the added margin of profit put upon it.

Estimates of stonework of gables, can be readily computed by treating them as triangles and, after finding the area, which is done as before by multiplying the base by half its altitude, or really the width of the house or bay by the rise of the roof, and the result by the thickness for number of cubic feet it contains, deducting all the contents of all windows or openings if there be any, for material. Some builders figure up gables as square, which is a sure plan, as the extra time consumed in forming the gable compensates for the gain in material.

The cost of ordinary brick lintels is covered by the material gained from the opening, but if spanned by stone or brick arches, a price per cubic foot must be computed by finding the content of the arch. A fair price would be from 35 to 40 cents for rough finished faces and pointed joints; if faced stones, to be paid for extra.

An important item in openings which must be allowed for, is the centering, which takes both time and material to make a set level. About 5% of the cost should be added.

Ashlar veneering can be figured by the superficial foot, with an extra price for all door jambs, window mullions, columns and caps. Pedestal bases, steps, lintels, etc., can be figured separately or a door and stoops complete; windows complete. It is usual, where there are many, to figure up the cost of one and multiply it by the entire number to be constructed for an average price, adding the extra cost of any detail on which one or two may differ from the rest.

In regard to prices, it would be obviously impossible to give even an approximate one for all the different details and designs, but if any inexperienced estimator be called upon to figure on stone work, let him obtain some, or better still, several stone contractors' prices for working material and selling, and then add his percentage of profit.

There are more applicants desiring to attend the plumbing class in connection with the technical instruction provided under the auspices of the Council of Arts and Manufacturers of Quebec, than can be accommodated.

To make a good paint for shingle roofs that can be applied cold and drys quickly: Take one barrel of coal tar, ten pounds of asphaltum, ten pounds of ground slate; mix by the aid of heat and add two gallons of dead oil.

HAMILTON.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

TAKING a review of building matters for the past season, the "Ambitious City" can compare favorably with former years. There has not, of course, been the great rush of works that characterized former years, but we have had several large buildings erected which gave employment to a considerable number of workmen, besides a number of private villa residences of which you have been notified from time tu time.

Our new City Hall is now finished. Its internal arrangement is said to be very good, and considering the cost of the building, the exterior has a very imposing appearance indeed, and reflects credit on the designer, with the exception of the steps, which evidently detract from the general effect.

Our Y. M. C. A. building on James Street is also completed. It is a large plain brick building, without any effort at exterior decoration, but the interior is judiciously arranged.

The new Free Library building is in course of erection, and promises to be a very fine building when finished.

The large new school on Queen Street is a brick building with cut stone dressing and pointed arches, and is a very substantial, well-finished piece of work. There is also a new school just completed on Wentworth street, similar in character and design to the one on Queen street.

The Court House in Prince Square is having new stone steps to the front entrance in place of the old ricketty step that were originally built, but it is feared that the new steps when finished, will not in appearance at least, give the satisfaction expected. There will be an easier ascent, but the style and effect will be wanting, for like the old steps the new ones will not have rounded nosings on the tread, which would give a massive and finished appearance to them. Neither in this case nor in that of the new city hall steps was the style of step approved of by the designers, for reasons no doubt known to themselves although not to others. We have had material changes and alterations made by the architect in the audience floor or court room, with the idea of improving the acoustic properties, but without any other effect than that of making bad worse. Sooner or later, however, the work must be properly and effectually done, for at present it is impossible even to hear the judge address the jury, so badly is the room arranged for the purpose required.

The new Presbyterian Church on King and Emerald streets, is now ready for roofing. It will evidently be a neat and well designed building when completed.

QUEBEC.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

THE widening of St. John street (within the walls) is now well advanced. With three exceptions, all the buildings have been either demolished or the fronts have been set back. It is to be regretted that in some instances in which the old buildings have been remodelled, owing to the lowness of the stories and shallowness of the buildings, the results have been far from pleasing; in others, where the buildings have been of rather more modern build, more satisfactory results have been obtained. Of entirely new buildings, only seven have been erected; they are as follows: Geo. T. Phillips, two stores and dwellings, 53 ft. front, to cost about $9,000, architect, H. Staveley, contractors, C. Cote & Co. for the masonry, A. Cummings carpenter; S. J. Shaw, store and dwelling, 30 ft. front, to cost about $6,000, same architect as above and same mason, John Hatch, carpenter; Savings' Bank, store and dwelling, 22 ft. front, to cost about $6,000, J. F. Peachey, architect, L. Larose, mason, and F. DeVarennes, carpenter. All the foregoing have plate glass shop fronts, upper stories of Deschambault cut stone, with molded caps, strings, carved capitals, &c. Ursuline Ladies, one store and two dwellings, 30 ft. front, plate glass shop front, and pressed red brick with stone trimmings, will cost about $7,000. F. X. Berlinguet, architect, T. Pampalon and E. Matte, contractors. Joseph Dynes, one store and dwelling, 40 feet front, white brick with stone trimmings to cost $7,000, H. Stavely architect, A. Cummings, contractor. D. Ouellet, two stores and dwellings, 35 ft front, red brick, painted and blocked off to represent stone, plate glass front to shops, to cost about $8,000, D. Ouellet, architect. R. H. McGreevy, two stores and dwellings, plate glass fronts, upper stories of pressed red brick with pilasters of same dividing under frieze into two smaller pilasters, each capped with carved stone capitals, will cost about $9,000; architect, H. Staveley, contractors, L. Larose and W. J. Peters.

As an outcome of the widening of St. John street it may be mentioned that the well known photographer, Mr. J. E. Livernois, being obliged to vacate the premises he formerly occupied, purchased from the Heirs McClure the extensive property at the junction of St. John Fabrique and Garneau streets, at one time known as Dexter's Hotel, which has been transformed into a model photographic establishment. The lower story of the main building is to be used as a salesroom for photographic and artists' materials, and frames for pictures. A handsome recessed portico, with broad stone steps, upon which rest enriched iron columns to carry the front wall above, gives entrance to this room. The woodwork, cherry stained, with decorated walls and ceiling, and floor of black walnut and brick, with an elegant staircase leading to the *salon* on the second story, make up a very handsome apartment. A room of corresponding size, handsomely decorated, forms the *salon* from which opens dressing rooms. Passing these the gallery is reached, having a splendid north light located in the wing. Other rooms also in the wing serve the various purposes required by a photographer, viz., dark room, solar room, printing room, negative room, bath room, &c. Returning to the main building, and mounting to the third story, are found the artists' rooms, where coloring and other processes are carried on. The business room of the proprietor is also on this flat. The whole work has been done by day's work, F. DeVarennes and T. Pampalon, having charge of the carpentering and masonry respectively, with Mr. B. Leonard as painter and decorator, and Z. Vandez, heating apparatus and sanitary arrangements. Stained glass from Spence & Sons, of Montreal, and engraved glass from Elliot & Son, Toronto. Mr. H. Staveley, architect, designed and superintended the various works; Mr. Livernois having spared no expense, has succeeded in securing an establishment that is admirable in every way for his purposes.

MONTREAL.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

SEVERAL letters have of late been published in our local papers claiming that our builders amass wealth too rapidly in Montreal. This is rather too broad a statement, as I think an investigation would prove that it is the exception to find them possessed of more than their share of this world's goods. True some few have "struck oil" as the saying is, and are now considered fairly well of; but why growl? Why attack the honest mechanic who earns his bread by the sweat of his brow? Why not as well say our merchants are getting too rich, therefore they must charge too much for their merchandise? Why single out the builder from the rest of the community? Look how the brewers and tavern keepers make money; in their case it is the exception to find a poor one! yet no one raises a cry. It is only when a contractor or two has been successful, that some envious "land grabber" or speculator, in all probability, finds fault because he wishes to build at his own prices and pocket the proceeds. There is one thing at least that we can boast of, and that is, as a rule our buildings are substantial, even if they do cost a trifle more than in the States.

CITY HALL NOTES.

Under this head recently I mentioned the granting leave of absence and bonuses to city employees. We are now reaping the fruits, as will be seen by the following extract from the *Star*: "The Road Department is one of those things that no fellow can understand. The acting chairman, Alderman Wilson, says he has been away for the summer, so he does not pretend to understand it. Alderman Dubuc, on the other hand, says he has not been away at all, and yet he does not understand it either. All that the general public know about the Department is that it costs about a quarter of a millon dollars a year; that it has never got any money when improvements are asked for; but that notwithstanding this fact it manages to block the main thoroughfares of the city for the best part of the year. Somebody has been spending the department's last cent and plunging it into debt, and nobody seems to know who did the deed or who authorized it. The Road Committee asks for a special appropriation of $4,500 to remove the greenhouses from Viger gardens to Logan's farm and the Finance Committee refuses to grant the money. Thereupon somebody assumes the responsibility of getting the work done and leaves to the Road Committee the responsibility of paying for it. The situation is further complicated by the fact that the Road Committee whether willing to pay or not has not got the money. The work was done when Mr. St. George was away on vacation and Mr. Lavelle was in charge. Now explanations are in order, but, unfortunately, Mr. Lavalle is away on vacation. There is no place where the city's by-laws and regulations are so set at defiance as in the City Hall."

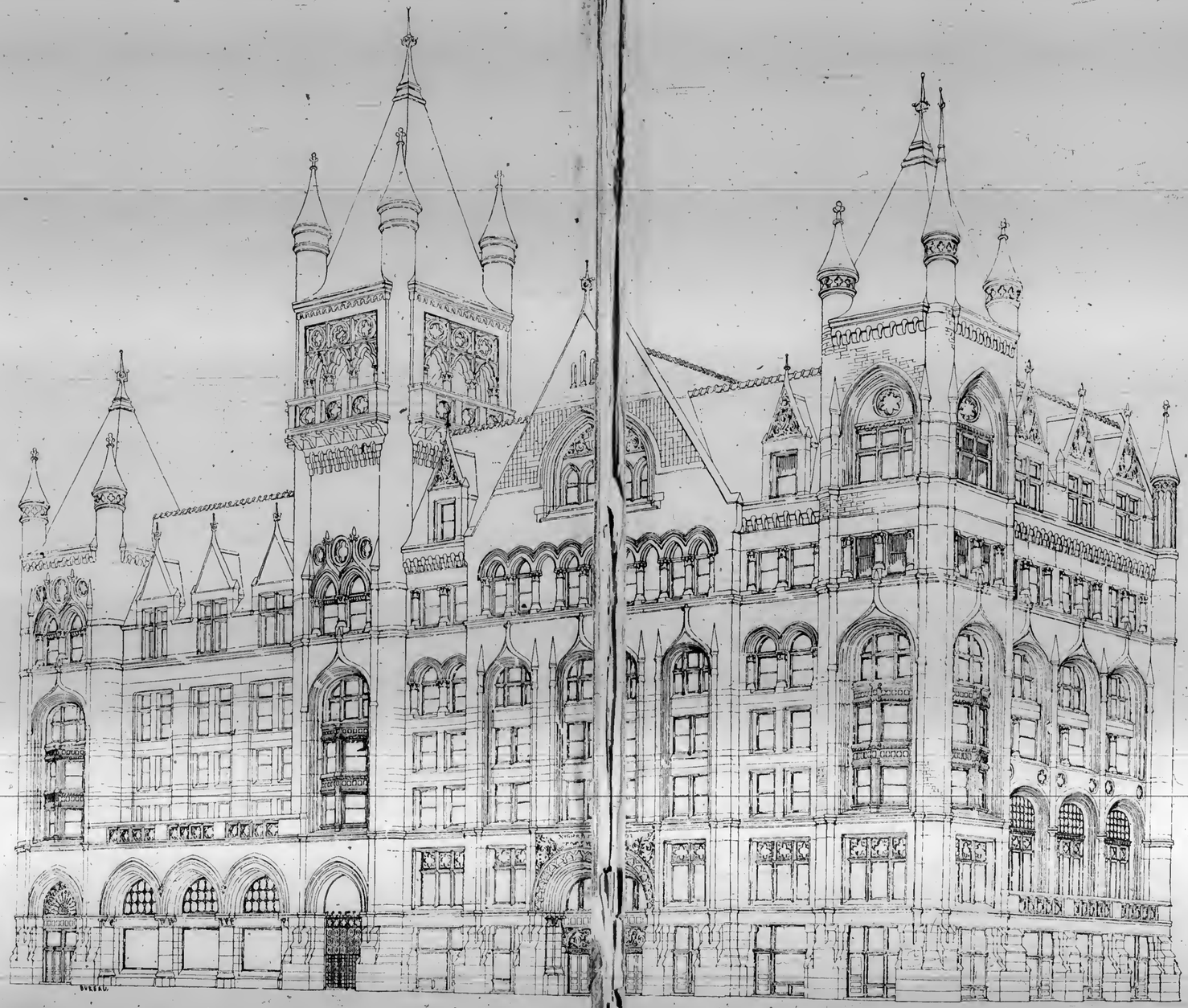
CANADIAN SOCIETY OF CIVIL ENGINEERS.

"At the first meeting of the season, a paper was read on "Bridge Calculations." At the November meeting we are promised a paper by Mr. S. Keefer, M. C. Soc., on the Cornwall Canal, which, owing to recent breaks, etc., will probably be one of the most interesting papers of the session.

FLOOD PROTECTION AND HARBOR IMPROVEMENTS.

This question is daily becoming an important one for Montreal, because, 1st, we must be protected from spring and fall floods; 2nd, our increasing trade demands increased wharf accomodation; 3rd, ratepayers are shortly to be called upon to vote a million of money as the city's share of the undertaking. It would take more time and space than I have at my disposal to give even a synopsis of the various schemes suggested, without commenting thereon. The question is too important and involves too many engineering difficulties to be treated in an offhanded way. So far the public have hardly sufficient light upon the proposed improvements to be able to even vote intelligently on the by-law to raise a million dollars, which they will be shortly called upon to do. As I understand it, there has been a sort of a combination between our City Council and a Committee of the Harbor Commissioners to consider the proposed improvements, and at a meeting held on the 14th June, 1888, it was resolved:—

That it appears expedient in the interest of the city and harbor of Montreal that there should be joint action in plans covering the following improvements: 1. An elevation of the front of the city, securing the city from flood inundations. 2. A sufficiently commodious street, enlarging the present Commissioners street. 3. A plan of harbor improvements specific in detail, in so far as it may connect with the city improvements above referred to. 4. The appointment of the City and Harbor Engineers to furnish plans providing for above improvements, make estimates of



Accepted Design.
Knox, Elliot & Jarvis, Architects.

"Confederation Life Association"
Toronto.

probable cost, and so far as practicable the proportion of total cost that should be assumed by the city and harbor respectively.

In accordance with these resolutions, the city and harbor engineers have, I understand, examined into six schemes with this end in view, the cost ranging from $4,624,755 to $2,827,894. The scheme they have recommended for adoption is known as No. 6, at a cost of about $3,000,000. It contemplates the widening of Commissioners and Common streets to about 75 feet east of St. Peter street, by taking up a portion of the harbor property, and to the same width west of McGill street, by expropriating private property between St. Peter street and McGill street, where a restricted width of the wharf would not allow of widening on that side, and value of the building and property owned by private individuals on the city side would make it too costly to attempt. Therefore, the present width is retained. It is proposed to raise the wharves to Commissioners street level, so as to abolish the ramps, and the city is to be protected from flood by a parapet wall, with openings and moveable gates. By this means, Commissioners street would at its narrowest width be 75 feet and would average nearly 90 feet. The estimated cost of the scheme is :

For works - - -	$2,739,372
For Land and Buildings - - -	88,522
Total - -	$2,827,894
Of this the city's portion would be -	708,428
and the harbour's portion would be'	2,119,466
Total -	$2,827,894

The report says that scheme No. 6 answers all necessary conditions, and in proportion to its cost it better suits the combined interests of the harbour and city than any other scheme of which they have any knowledge, and they therefore recommend the adoption of its main features with a view of its being carried out at such rate as circumstances may warrant. This plan was adopted by the Council of the Board of Trade on the 4th May, 1889.

Yesterday afternoon the City Surveyor at a meeting of the inundation Committee, reported on three alternative schemes for access to the wharf in connection with the harbour improvements and flood protection schemes.

No. 1 is for a tunnel from Craig Street, end of St. Denis Street to Water Street, also including the construction of ramps at Barclay and Gale Sreets, at a cost of $400,000.

Scheme No. 2 is a tunnel from Craig Street under Champ de Mars to a point at or near the Nelson Monument, and then an open cutting as far as le Roger and another tunnel to St. Paul Street including ramps at Barclay and Gale Streets, at a cost of $230,000.

No. 3 is a tunnel from Craig Street under Brock Street right down to the wharf level, and a ramp at Gale Street, at a cost of $186,000.

Mr. St. George prefers the last scheme as being most economical and useful. No. 1 he considered extravagant and unsatisfactory, as it only leads to Walter Street and not to the wharves. No. 2 would destroy the market place on Jacques Cartier square, and is not the situation where the entrance for heavy traffic is needed, the manufactories being all far to the west or east of that side. No. 3 he recommends as embracing all these points and much cheaper than either of the other schemes.

I understand that in the near future "blue prints" of the proposed improvements will be prepared for the use of the City Counsellors and their friends, and I will probably be able to obtain one.

PROPER PREPARATION OF CLAY.

THE thorough preparation of clay is, for any variety of brick a most essential consideration, says the *Brickmaker*. In order to produce a brick of the first quality, with good surfaces, sharp and clean arrises and one that will have sufficient density, and a clear, metallic ring, there must be thorough disintegration and complete amalgamation of all the clayey particles. In the near future the proper working of clay, its thorough tempering and preparation will be regarded as of as much importance as is now the manipulation and mixture of ores for the production of iron and steel. There has been a great deal said in times just past against the method of manufacturing brick by the semi-dry process, but in the majority of instances where this method has been employed and found to yield unsatisfactory results, the principal cause for this lack of success will usually be found in the improper grinding and mixing and other essential details relating to the preparation of erude clay.

If it is desired to produce a superior quality of hand made or machine made brick, the clay should be made smooth by proper preparation and thorough tempering. If this is left to the judgment of careless employees the work is usually slighted and the proprietor of the yards should see for himself that the clay is prepared as it should be.

When clays are not properly ground the dry lumps of the material imbedded in the body of the brick cause it to break or crack in many places, and this is of itself indisputable evidence of improper preparation of the clay from which the brick was made. When the clay to be utilized is of a bluish variety, lumpy, rough and difficult to soak, it will amply pay any manufacturer to use a suitable crusher for the reduction of the clay, as otherwise the bricks, although strong, will be rough in appearance and often not marketable at remunerative prices.

MANUFACTURES AND MATERIALS

NOTES ON TIMBER FOR BUILDING PURPOSES.

THE White Pine (*pinus strobus*) is the most useful of all the pine family and forms our staple in carpenters' work, and we apply it to all the purposes to which "Northern" pine is put in Europe. White pine is a native of Canada and stands well its native air, but in England where it is imported under the name of "Yellow pine," it is not so durable, being affected by the damp of the atmosphere. The wood is light, soft, remarkably free from knots, easily worked, and may be recognized by the minute elongated dark specks, when planed, which run over the surface in the direction of the grain. It can be obtained in logs 14" to 26" square, and from 18 ft. to 40 ft. in length; also in deals 2" to 3" thick, 24" wide, and from 10 ft. to 20 ft. long.

Canadian Red pine (*p. rubra*) is a variety of the Northern pine, grown so extensively in Norway, Sweden, Russia and Prussia, and used chiefly in Europe, but it is superior to it, having less sap and few knots, and it is not so apt to shrink or warp in seasoning.

Canadian yellow pine (*p. mitris*) is inferior to the red but similar to it.

Tamarack, or American Black Larch (*pinus pendula*) is one of the pine tribe, but of a harder and much more durable nature than the foregoing pines. It is especially suited for situations exposed to the weather, for floors and stair cases where there is much wear, and when oiled and rubbed, has a very fine, rich light yellow colour, or sometimes a brownish white. It warps much as it seasons, but stands well when thoroughly seasoned. The white kind is more common than the darker. The tree grows to a mean size of 45 ft. high and 33" in diameter. It is considerably stronger than oak though not so strong as teak.

Teak (*tectora grandis*) is one of the most useful of timbers. It comes chiefly from Burmah and Pegu but also from Siam and Java. It is a large tree, often growing to 100 ft. high and 10 ft. circumference. The wood is rather variable in appearance, depending much upon the climate of the locality in which it has grown; the color varies from a brownish yellow to a deep brown, the grain is clean and straight, it is easily worked and shrinks little in seasoning, but owing to a liability of its fibres to separate in a longitudinal direction, it has to be worked with care. Teak is very durable in all situations. It does not corrode iron as oak does and it is suitable for any purpose.

Oak. There are several kinds of oak in the market. American Whte Oak (*quercus alba.*) British oak of two or three different kinds, Baltic Oak from Dantzic, Memel and Stettin, "Clapboard" from Norway, and "Dutch wainscot" from Holland. British oak (*quercus pedunculata*) is one of the strongest and most durable of European woods. Its place has of recent years, however, been taken by the pines and firs for general timber construction, owing to its scarcity and cost. The wood of a slightly reddish tinge, is comparatively free from knots; the grain is free and the large medullary rays numerous. It can be procured in logs from 9" square and 10 ft. long to 20" square and 26 ft. long—the larger sizes, however, are more difficult to procure.

Another species from England is the Sessile printed oak (*Q. sessiliflora*) and although the wood is somewhat softer when young, it is nearly if not quite equal to the quercus pedunculata. Its colour is darker and more uniform, the grain less varied and the larger medullary rays are not so abundant. When old the gloss and smoothness of the grain makes it appear like chesnut. It is liable to warp and become shakey in seasoning but it is very tough and difficult to split into lathes and pales.

Baltic oak is inferior to British, and is distinguished from it by the comparative straightness of the grain and freedom from knots. It is close and compact in grain, although rather short; the Memel variety is finer in grain than the Dantzic. Logs are from 10" to 16" square, and from 18 ft. to 30 ft. long. Planks vary from 2" to 8" thick, 9 inches to 15 inches wide, and 24 ft. to 35 ft. long.

Oak under the name of "Clapboard" comes from Norway and from Holland under the name of "Wainscot. The latter may be distinguished by the absence of white streaks which cover the surface of the "Clapboard" in all directions. These two kinds are less liable to warp and split when cut thin than English oak. They are, however, very much softer, and in other respects inferior to it.

The American white oak is very tough and pliable, straighter in the grain than British oak, but inferior to it in durability. The sizes obtainable are logs 12 inches to 24 inches square and 25 ft. to 40 ft. long. The colour of the wood is a whitish brown.

All oaks shrink more or less in seasoning and in fact every time oak is planed it will shrink, but the white oak shrinks less than any kind, and almost without splitting, and is therefore considered best for constructive purposes.

Oak should not be placed in contact with iron, as it leads to the decay of both materials.

Chesnut (*castanea vesca*) flourishes in sandy soils and is found in most parts of England, America (North) and Africa. The wood resembles oak in appearance, but it has not the large and distinct medullary rays. The

annual rings are very distinct. It is a tree of slow growth, and there is no sap-wood. Its colour is dark brown. The chesnut is very durable, more easily worked than oak, and does not shrink or swell so much. The young wood is hard and flexible and the old wood brittle.

Ash (*fraxinus excelsior*) is grown in America, Asia and Great Britain. Its colour is brownish-white, with longitudinal yellow streaks. Each annual ring is separated from the next by a ring of pores, the wood is heavy and weathers well, and is free from sap and shakes. It is seldom used for beams that have to support weight, because when young the pores are often broken, which can not be discovered until the wood is converted or cut up.

Common Acacia or American Locust Tree (*Robinia pseudo-acacia*) is a native of the mountains of North America, the wood is very durable and is to be obtained of the average sizes 32 feet long and 23 inches diameter. Some of the houses built by the first settlers of this wood are still standing firm and sound. It is suitable to all purposes to which oak is put, and requires about the same amount of labor as ash. For pales and posts there is no better wood. Its colour is greenish; with a slight tinge of red.

Of cedar there are many kinds, and there are other trees somewhat similar that are called by the same name. The cedar tree or the white cedar of America (*Juniperus*,) the Bermudian cedar (*Juniperus Bermudiana*) from Bermuda, and the Bahama Islands, and the Red cedar (*Juuiperus Virginiana.*) The cedar is a durable wood resinous and emits a strong smell. It is straight grained and easily worked. All these kinds are suitable to building purposes. The cedar of Lebanon or Great Cedar (*pinus cedrus*) is a tree of great size, the trunk being often 39 inches in diameter. It is very durable and its general colour is a rich light yellowish brown. The annual rays are distinct, each ring consisting of two parts, the one part being darker and harder than the other.

Poplar (*populus*). The poplar is a tree of which there are many species. The Black poplar and the Common White are the most esteemed. It is a native of England, where it grows to a great height, with straight trunk and branches more like twigs than boughs. It requires two years seasoning, but when dry is tolerably durable and not liable to shrink or swell. The annual rings are a little darker on one side than on the other. Its colour is yellowish or brownish-white. It is a useful wood, light, soft, and easily worked and carved. It is only indented, not splintered by a blow.

Mahogany (*swietenia mahogani*) a well-known wood, principally used for interior fittings and furniture. The tree is often found with a solid trunk, 40 feet high and 6 feet diameter.

Spanish mahogany comes from Cuba and other islands in the West Indies. "Honduras" mahogany from Mexico, the Bay of Honduras and from Brazil. Mahagony is very durable when kept dry, but will not stand exposure to the weather. The wood is tough, shrinks and warps less than most other timbers. "Spanish," is the hardest, most beautiful in grain and of the darkest colours. "Honduras" is usually softer and lighter in colour. The wood is tough, strong and flexible, but brittle when dry. Mahogany is known in the market under various names suggestive of the appearance of the vein formations, such as "plain" "veiny" "watered" "velvet cowl" "birds eye" and "festooned." Logs are usually from 11 inches to 24 inches square, and from 18 feet to 35 feet long, except those from St. Domingo, which are seldom more than 10 feet long and 13 inches square. Occasionally logs of even greater sizes are to be had.

Beech (*fagus sywatica*) and Elm (*ulnus campestris*) are not generally used in building except for piles. Both are very durable when dry, or if kept constantly wet, but when exposed to changes do not last long.

Walnut (*juglans regia*) is a native of Persia and the north of China. The wood is very beautiful and its color superior to the red brown of mahogany. It is too flexible for use in the form of beams, besides being costly owing to its scarcity, but it is durable and admirably adapted to interior fittings. White Walnut or Hickory (*juglans alba*) is a North American tree often growing to a diameter of three feet, and very tough and flexible. Black Virginian Walnut, (*juglans niger*) found principally in Pennsylvania and Florida, is a large tree, and for interior fittings and furniture is the most valuable of walnuts. Its grain is fine and beautifully veined, and it takes an excellent polish. The heart wood is greyish brown, with dark brown pores, often much veined, and the sap wood is greyish white. The texture is not so uniform as mahogany, the pores being more thickly set on the one side than on the other of the annual ring. It is not so easily worked, but it shrinks very little.

Butternut (*juglans cuierea*) is one of the walnuts, growing to a height of from 30 feet to 35 feet. Its characteristics are similar to those of the black walnut, but its colour is a pale yellow, and it is beautifully marked. Its principal use is for internal fittings.

White fir or spruce of Canada (*abies alba*) is a variety of fir which grows in the same regions of Europe as the red pine. New Brunswick fir is somewhat inferior to the fir of the rest of Canada. The Canadian fir is less resinous than the Europeaa, nor is it so durable. It is more liable to twist in seasoning, but it is tougher and lighter in weight than the other.

It is obtained in deals 2 inches thick, 7 inches to 11 inches wide, and from 8 feet to 21 feet long.

Pitch pine (*pinus rigida.*) The best pitch pine comes from the Southern States of North America, chiefly from the ports of Savannah, Darien and Pensacola. The wood has a reddish white or brown colour; annual rings are wide, strongly marked, and form beautiful figures when the wood is dressed and varnished. It is very resinous which makes it extremely durable. It is hard, heavy, very strong, free from knots, and contains a large proportion of sapwood. It is subject to heart and cup shake, and soon rots in a moist atmosphere. The wood is brittle when dry, and its elasticity, strength and durability, are often reduced by the practice of "bleeding," or tapping the tree for the sake of the turpentine it contains. It is too full of resin to take paint well, but varnishing suits it. Pitch pine is used for the heaviest timber structures in engineering works where great strength and durability are required. Ship builders use it for deep planks, and for carpenters' and joiners' work it is admirably suited. For floors and steps it is very durable.

The following table represents the strength, stiffness and toughness of various woods, taking oak as the standard at 100.

Wood.	Strength	Stiffness	Toughness
Oak	100	100	100
Chesnut	68	54	85
Elm	82	78	86
Acacia	95	98	92
Spanish Mahogany	67	73	61
Honduras Mahagony	96	93	99
Common Walnut	74	49	111
Teak	109	126	94
Poplar (*great white*)	86	66	102
Lombardy Poplar	50	44	57
Cedar of Lebanon	62	28	137
Christiana Deal	104	104	104
American White Spruce	86	72	102
British grown Norway Spruce	70	81	60
Tamarack or Larch	103	79	134

PERSONALS.

Mr. Geo. W. Gouinlock, of the firm of King & Gouinlock, architects, Toronto, was married on Oct. 10th to Miss Georgie Watson, of Paris, Ont.

We are informed that it is the intention of Messrs. James & James, architects of the new Toronto Board of Trade Building, to open an office in that city at the beginning of the New Year.

To make a good water stain to imitate walnut, that will not cost too much, take of burnt umber 2 parts, rose pink 1 part, glue 1 part, water sufficient; heat all together and dissolve completely. Apply to the work first with a sponge, then go over it with a brush, and varnish over with shellac.

Terra cotta ware that is broken upon a slant, either outward or inward, can be mended by roughing the broken surfaces with a chisel or hammer, then placing the pieces together and pointing them with a mixture made of 20 parts clean river sand, 2 parts litharge and 1 of lime, made into a thin putty with liceed oil. If the terra cotta is very red, the putty can be colored with Venetian red. If other colors are desired, yellow ocher or Spanish brown will give the desired shade. Two pieces of stone, brick or similar material can be united with this cement. Sometimes it is used for covering the outside of brick buildings to make them look like stone of different kinds. Used for this purpose the cement is called mastic.

CONTRACTS

WINNIPEG.—The Y. M. C. A. will erect a new building, to cost about $20,000.

NORTH BAY, ONT.—The C. P. R. is about to erect a new station, to cost $9,000.

OTTAWA, ONT.—Important additions and improvements are to be made to the Supreme Court building.

KINGSTON, ONT.—It is proposed to expend $25,000 in further extending the city water mains.

INGERSOLL, ONT.—It is reported that Mr. James Brady has decided to erect a first-class hotel here.

WEST TORONTO JUNCTION.—The sum of $25,000 has been voted for the extension of the water mains.

BRANTFORD, ONT.—The Council has engaged Mr. Chipman, of Brockville to report on the best system of sewage disposal.

COATICOOK, QUE.—The Coaticook Water Power Co. proposes to construct reservoirs at the head waters of the Coaticook river.

QUEBEC.—A cable despatch has been received stating that a syndicate of English bankers has been formed to build a bridge over the St. Lawrence at Quebec, and also a railroad on the north shore of Quebec to the Straits of Belle Isle.

LONDON, ONT.—The Council will probably act upon the recommendation of the Local Board of Health to extend the water mains to all the streets of the city.—London South is considering the question of construct- a system of water-works.

MONTREAL, QUE.—Steps are being taken to raise $100,000 for the erection of a Masonic temple.—The Superintendent of the Water Department reports that the breast wheel and its three pumps, and the three pumps of No. 3 wheel at the low level pumping works will need renewing this winter.

TORONTO, ONT.—The congregation of the Church of Christ will erect a new edifice on Cecil St., near Spadina Ave.—A building is to be erected for the use of the Young Women's Christian Guild, at an estimated cost of $15,000. Mr. W. H. Howland can give particulars.—The following building permits have been issued from the office of the City Commissioner since the date of our last issue: Alf. James, 1 storey bk. dye house, 135 Richmond street W., cost $1,100; Mrs. S. R. Grand, 2 storey bk. addition and alterations. Bay and Adelaide streets, cost $3,000; Mr. Beckett, three att. 2 storey and attic bk. dwellings, 524 Ontario St., cost $6,900; Corporation of Toronto, bk. tower, College St. fire hall, cost $2,500; John Clarke, alterations Gerrard and Ontario Sts., cost $1,000; Dr. A. A. Abbott, 3 storey bk. addition, 25 Melinda St., cost $2,000; Allan C. Thompson, alterations and additions, 13 Jordan St., cost $6,000; H. Staines, bk. blacksmith shop and alterations. Sheppard St., cost $1,500; Trustees Congregational Church, bk. church, Hazleton Ave., and Scollard St., cost $30,000; W. C. Price, 2 storey bk. store and 2 storey bk. stables, W. side Claremont St., cost $7,000; Land Security Co., two 2 storey bk. stores, Queen, nr. Simcoe St., cost $5,500; School of Practical Science, 4 storey bk. addition, cost $3,500.

PROPER SIZE OF PIPE FOR GREENHOUSE HEATING.

J. D. CARMODY of Evansville, Ind., has published a treatise on heating of Green Houses by the hot water system, illustrated with engravings, in which are full directions how to locate the pipes, put them together, make the joints, mend leaks, and all necessary instructions. From this treatise we quote some useful instructions on the proper size of pipe for green house heating, in which the advantages and disadvantages of large and small pipe are considered.

Large pipe, say 4-inch, commonly used in connection with water heating, contains a large quantity of water, (about one gallon to the foot,) and for a line of 1,000 feet or more, it will require a long time to heat, but it possesses the corresponding advantage of retaining heat much longer after the fire dies out. Two inch pipe has one-half the heating surface of 4-inch pipe, but it holds only ¼ the amount of water contained in the same length of 4-inch pipe; consequently the same fire in the same sized boiler will heat the water in ¼ the time, or will impart 4 times the heat in the same time where 2-inch pipe is used instead of 4-inch.

It will not be necessary to have double the amount of 2-inch pipe when used instead of 4-inch, because the water being decreased in quantity, will be much hotter. To substitute 2-inch pipe for 4-inch, add one-half to the length required of 4-inch.

EXAMPLE:—If you require 1,000 feet 4-inch pipe to heat a house you will need 1,500 feet of 2-inch for the same purpose. The use of 2-inch pipe results in economy of fuel, but as small pipe cools off quicker closer attention must be paid to the fire.

One advantage in favor of wrought 2-inch pipe is, it can be put in at less expense, and is stronger than the cast iron 4-inch pipe.

Where the pressure system is used, wrought iron pipe only will be safe; the size may be from 1-inch to 2 inches, according to locality.

The drawback in the use of wrought pipe by florists, who generally put in their own pipe, is the cutting and threading; this requires expensive tools that only pipe fitters have, while cast pipe can be put in by common labor, if printed directions are followed.

THE ABILITY OF ARCHITECTS TO ESTIMATE.

A SUBJECT that will be of mutual interest and advantage to architect, contractor and proprietor, will undoubtedly prove acceptable in the columns of the CANADIAN ARCHITECT AND BUILDER. I would therefore respectfully submit the following suggestions and remarks, hoping that they will be received in the spirit in which they are given.

The attention of the public is continually being drawn to the wide discrepancy between the architect's estimate of a proposed building and that ascertained by the contractor's tenders, and in many instances it would seem that the architect in stating such probable cost had really made no estimate at all, or else had hesitated in giving what his skill and experience justified his client in expecting from him. A very striking instance of this is shown in the late competition for the new Library Building in the City of Hamilton as set forth in the September number of the CANADIAN ARCHITECT AND BUILDER. The appropriation for the erection of the building was placed at $20,000, but when the contractors' tenders were received, the figures showed the cost to exceed the architect's estimate by $13,000. This was certainly a very great discrepancy, but by no means an unusual one—so much so, that most clients in having designs prepared for a new style of building place a very modest reliance on the architect's idea of the actual cost of the building when erected according to the plans he is instructed to prepare, and conclude that as the tenders may be much higher than he desires, he will notify the contractors that he is not bound to accept any of the tenders. In such cases the loss of time and money falls on the contractors estimating for the work.

This state of things is all radically wrong, and should not be. An architect is presumed to be, and it is only right that he should be, competent to measure up the different branches of work required in the erection of a proposed building after his plans and specifications are *merely outlined*, and then from his ascertained knowledge of material and labor, make up a fair average estimate of the cost when finished, and submit the same to his client. The latter could then readily make any necessary alterations, and save disappointment and the expense of preparing new plans. By so doing the architect would certainly command his client's respect and confidence in his practical ability.

In Canada the architects seem to have a different and certainly an erroneous opinion in this connection. They maintain that their duty is to prepare the plans and specifications in accordance with their client's instructions, and then await the contractors' tenders for the cost of the erection of the building "because they are architects and designers, not building surveyors or measurers." Now in the cities of the old country the builders generally engage the services of a professional building surveyor to go to the architect's office and take out the quantities, and to which they affix their prices and make up their tenders; and it is quite customary for the architect to engage the surveyor to take out the quantities and have them manifolded and supplied to the contractors at a certain price each, or a charge covering the whole expense made to the successful competitor. By this procedure all the tenders are founded on the same measurements or quantities, so that the tenders can only vary to the extent of each contractor's own valuation of the work. The architect would also find the Bill of Quantities with prices affixed a fair criterion to go by in making

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Prices for advertising sent promptly on application. Orders for advertising should reach the office of publication not later than the 12th day of the month, and changes of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The Ontario Association of Architects has appointed the "Canadian Architect and Builder" its official paper.

A CONSIDERABLE amount of correspondence and other interesting matter intended for publication in this number is unavoidably held over for lack of space. It will appear in our issue for January.

AS we go to press we learn that the award has been made in the competition for designs for the Sun Life Insurance Company's proposed new building at Montreal. The first prize, the supervision of the erection of the work, is given to Mr. Findlay, of Montreal; the second prize of $300, third prize of $200, and fourth prize of $100, to Messrs. Thomas, Montreal, McLea Walbank, Montreal, and James & James, Toronto, respectively. Fifteen architects entered the competition, 11 from Montreal, 3 from Toronto, and 1 from Hamilton. Mr. Wilm Knox, of Toronto, was the expert.

SEVERAL architectural students have asked us to define more clearly the requirements of some of the competitions in the series announced in our October and November issues. We have accordingly revised the specifications, with the result we trust, of removing any ambiguity which might have formerly existed. We would urge intending competitors to note carefully the instructions regarding the manner in which drawings should be prepared. The design which took first place in the last competition, was so badly drawn that we could not have illustrated it if we had so desired. The lines must be drawn firm, heavy and open, in order to allow of the drawing being reduced.

THE close of Volume II of the CANADIAN ARCHITECT AND BUILDER is reached with the present issue. We have aimed to make each succeeding number in this volume more valuable than its predecessors. If we may judge of the success of our efforts by the increase in number of our subscribers and advertisers during the last year, we certainly can have no reason to complain, for the support received from both sources has been of a most liberal character. Representatives of this journal have personally visited during the year almost every city and town of importance in the provinces of Ontario, Quebec, New Brunswick and Nova Scotia. As a consequence, our subscription list embraces every architect of prominence and a large proportion of the leading contractors in the provinces mentioned. Under such circumstances, we feel encouraged to press forward in the hope of attaining to a much higher standard in the year upon which we are about to enter. As most of our readers are aware, we have issued the initial number of a weekly intermediate sheet called the CANADIAN CONTRACT RECORD, the regular publication of which will be commenced in February. The object of this intermediate number is to supply contractors and supply men with advance information regarding contracts open to tender. The value of this publication will perhaps be better understood when it is stated that the members of the Ontario Association of Architects, comprising upwards of 80 per cent. of the architects throughout the Province, passed a resolution at their recent convention pledging themselves to insert all advertisments calling for "tenders" in this medium. The information thus supplied will be augmented by that obtained through correspondents located in every part of the Dominion. It is proposed to send this intermediate number to every subscriber of the CANADIAN ARCHITECT AND BUILDER free of charge. A classified list of advertisers in the CANADIAN ARCHITECT AND BUILDER will also receive gratuitous publication therein. Those who have not seen the prospectus of this new publication, are invited to send a postal card to this office for free copy, from which they may obtain all necessary information concerning the purpose it is designed to serve. We close the present volume by heartily wishing every reader the Compliments of the Season.

MUCH of our space in this issue is given up to a report in detail of the proceedings of the first annual Convention of the Ontario Association of Architects, held in Toronto on Wednesday and Thursday, Nov. 20th and 21st. Those who were present on that occasion will not need to be informed that the Convention was a highly successful one. Those not present, but who may peruse the report appearing in these pages, will, we doubt not, also arrive at that conclusion, and regret that they had no share in such a pleasant and profitable meeting. The weather was unpropitious, which perhaps kept some of the members at home, although we would hesitate to accept this as a justifiable excuse for their non-attendance. Every member of the Ontario Association of Architects should have the interest of his profession sufficiently at heart to attend once a year a meeting designed to promote its advancement. We commend this view to those members—comprising upwards of one-third of the total membership—who were conspicuous only by their absence, and especially the few Toronto members whose eager pursuit of the "Almighty Dollar" appears to have pre-

vented them from giving up a few hours of their time to the consideration of matters affecting the general welfare of the profession and the cultivation of the acquaintance of their professional brethren. There were about fifty architects in attendance. A gratifying feature, and one which contributed greatly to the success of the Convention, was the presence of representatives from every section of the Province.

In Mr. W. G. Storm, the Convention found a presiding officer capable of discharging with grace and decision the duties of that important position. Under his direction, and with the assistance of able coadjutors in the persons of the executive officers of the Association, the work of the Convention, from the commencement to the close, progressed harmoniously and satisfactorily. A number of excellent papers were read, which we shall take pleasure in presenting to our readers in subsequent numbers. The exhibition of architectural drawings, specially noticed elsewhere in this paper, was a source of surprise and delight to every architect, as well as to hundreds outside of the profession who were invited to make an inspection of them. Finally, the banquet at which the visiting members were entertained by their Toronto brethren, proved to be in harmony with all that had gone before, and resulted in promoting acquaintanceship, good-fellowship, and *esprit de corps*, upon the cultivation of which the success of the Association so much depends.

The coming year will be an important one for the profession of architecture in Ontario. A carefully considered draft of an Act of Incorporation is to be submitted for the approval of the Legislature at its approaching session, and its fate will be watched with no little anxiety. It is within the power of every member of the Ontario Association of Architects to bring some influence to bear upon his representative in the Legislature for the promotion of the passage of this measure. Let every particle of such influence be exerted before the opening of the Legislature. If this is done, we see no reason to doubt that the Incorporation, with its accompanying advantages, will be secured.

COMPETITIONS, before they can be satisfactory to the profession, as well as to the public, will require changes to be made in the conditions and in the methods of deciding them, which will insure that all parties interested will receive their proper positions. As now conducted, it is as probable that the successful competitor will win by a "fluke" as by the merit of his work, and that the party or parties holding the competition will proceed to erect a building according to a design much inferior to the one which they should have adopted. Conditions of competitions have been a fruitful source of complaint, and much effort has been given to make them perfect. Notwithstanding such effort, the conditions still remain a source of trouble, especially if they are interpreted in a sense that they were never intended to bear. It had been thought that conditions were very nearly perfect, but it would seem from a recent competition that such is not the case. It now devolves on those drawing up conditions to word them carefully, so that no possible meaning can be taken from the wording other than that intended by those who prepared them. Competitors must study out carefully the exact purpose and meaning of the conditions, and also all interpretations which a man seeking for non-intended meanings may be able to draw from the wording of such conditions. It has been generally understood that the literal meaning of many conditions need not be fulfilled if the spirit of such conditions were adhered to. Now it would appear that the literal meaning of conditions must be adhered to, even when such close adherence is absurd and unreasonable. There might be something said in defence of requiring competitors to fulfil conditions of doubtful usefulness if they were paid for their work, but when they are not so paid, and there is no necessity for unreasonable restrictions, they should be treated with a slight amount of consideration if not courtesy, as they have spent time and money in preparing a design with small hope of benefit. Moreover, those who are at the expense of a competition should not discover that one-third or one-half of the designs submitted have been ruled out on the most trivial technicalities, more especially as among the designs ruled out may be the design which they are seeking, and to obtain which they have gone to a large expense and much trouble.

When competitions were in their infancy, nothing was said of the number of drawings which should be sent in, the scale to which they should be drawn, nor the style of execution. It was found that competitors sent in numberless drawings to all imaginable scales, and executed in all styles of draughtsmanship. It was most difficult to decide which was the best design when the drawings were prepared to different scales and according to very different methods. This resulted in conditions being drawn up defining the number of drawings to be sent in, the scale to which they should be drawn, and the style of draughtsmanship. Any one can easily perceive that the intention of such conditions was to prevent a competitor obtaining any undue advantage over his opponents. Such was perfectly just and right. Now, it would seem that in justice to his competitors he must not neglect to do everything possible to obtain first position in the competition. Where a competitor failed to supply a drawing called for in the conditions, it was supposed that he did so to his own disadvantage and not to that of his fellow-competitor. If he supplied sufficient information for a competent, intelligent and liberal-minded expert to decide as to the relative merit of the design, it was taken into consideration, and if it was the best submitted, it was awarded first place. When a design was such that two elevations called for were practically alike, one was always considered sufficient. Such interpretations of the conditions were reasonable and according to common sense, even though the conditions stated that "the following drawings will be furnished" or "are to be furnished." In any case, common practice has made such interpretation the commonly accepted one. Where it was the intention to insist on the drawings called for being sent in, the wording should have been more definite, such as "shall be furnished" or "must be furnished," and a clause inserted calling attention to the fact, for where conditions have been interpreted very liberally, if not loosely, in the past, a hint of an intention to be more strict should be given. Nearly all competition conditions have contained a clause stating that all drawings or set of drawings not made in conformity with these instructions will be thrown out from consideration, thus showing that it was the intention that all designs should be considered on their merits upon the drawings and information placed in the hands of the expert after the drawings had been examined by his assistants. If this was not sufficient information for him to arrive at a decision favorable to the competitor, it was to the loss of such competitor, but it did not bar him from consideration. It has been considered that each and every competition was closely bound by any instructions which were given as to the use to which the building was to be put, and to provide all requirements exactly as stated in the conditions, if such were possible. For a competitor who strictly adhered to the instructions might be so hampered by such instructions that he could not do his best, and if he refrained from departing from the instructions, and thus did not follow his own choice, it was only right that his fellow competitors should be likewise restricted. There has thus grown up a well-defined and clearly understood principle that a competitor may depart from the conditions of a competition when he only injures his own chances, and that he must not do so when he gains or may gain any advantage over the other competitors. Such a principle seems reasonable and just, and to go beyond it is unnecessary, unreasonable and unjust.

In the competition for the Confederation Life Association building, the expert threw out a number of designs because they had not the full number of drawings asked for. Such ruling cannot be supported by precedent and would appear to be most unwise. If all experts were to hold themselves bound to throw out designs on technicalities, there would be few designs submitted in competitions, for no one could say what an expert would consider important and what unimportant. In this case, the expert held that no design could be considered which had not the full number of drawings called for, while he took into consideration designs which did not adhere to instructions, which all will agree should be adhered to by all competitors. He threw out designs because there was no perspective, or because the perspective was not finished—because the proper number of sections were not supplied, or because there were none, because one elevation was lacking or was not finished, &c. But he did not throw out designs because they did not follow the instructions as to requirements, which all designs should strictly follow. The design placed first has no vault "12 ft. x 18 ft. with door in end," nor does the Manager's security vault "open into the Manager's room or that of the Secretary." Many of the competitors devoted much time and trouble to arrange a plan which would fulfil these conditions, believing that they were binding upon them, and yet the expert who would not consider any design if all the drawings called for were not submitted, considers and places a design which does not carry out either of these instructions in first place, instead of throwing it out, as he should have done according to his own decision, even though he had not thrown out any design which did not have a full set of drawings. The result has been that the Association are now preparing to erect a building from a design which would have stood as low down as third, if not lower, provided the expert had been governed by precedent and common sense. It may be that he believed that the accepted design is the best, but if he does, we fail to understand on what grounds he bases that opinion. In the accepted design, the public, the officers and the clerks, are thrown together far too much to allow of the business of the Association being economically conducted. The public can wander into nearly every office of the Association without let or hindrance, and the clerks can go out to the public in like manner. How is a clerk to be controlled who can go out to the passages and corridors at any time in the day on the plea that he is going to the lavatory or lunch room. How will the female type-writers like passing through the public corridors whenever they are needed by any officer of the company? What is to prevent them having their friends in to see them at all hours of the day? Is the room for supplies in the most convenient place possible, and must the doors be kept continually locked to prevent the public from walking off with the contents? How will the medical officer like a room which will be comparatively dark at all times, and at an inconvenient distance from the Manager? Is it desirable to say the least, that the Secretary should be some distance from the Manager, etc., etc.? Faults exist in this plan which do not exist in more than one of those exhibited on the walls of the Canadian Institute. It is evident that if the plan selected is the best of those allowed to remain in the competition, those ruled out contained among their number the best designs which were submitted.

It would be instructive if the expert would explain on what grounds he rules out alternative elevations. There is not one word in the conditions stating that alternative elevations should not be sent in. What the conditions do say is: "Any of the competitors may send in a second set of drawings, embodying a different design, if he desires to do so; but in that case the second design must bear a different motto or cypher." That certainly does not mean that a competitor may not send in alternative elevations to a single plan. It does mean that when a competitor sends in two different designs they must not go in under the same motto. If the expert's ruling is correct, it would necessitate a competitor making duplicate drawings of his plans to accompany each alternative design or elevation, which is ridiculous, as any expert, even though he might be incomprehensibly dense, would at once see that they were all by the same man, and the object of using the motto would be defeated.

One great cause of complaint against the ordinary competition has been that the design would be judged by men without professional training and of no experience. It has been justly considered that no architect could be expected to prepare plans to be approved or rejected by incompetent judges. Many architects have refused to have anything to do with competitions where an expert was not employed. But is it not possible that in the appointing of an expert a very great mistake can be made? The fact that an architect is appointed or will be appointed an expert in a competition may mean a great deal or very little. It is possible to find among men not in the profession as competent judges of architectural designs as many men who call themselves architects. If it is necessary that the expert should be a professional man—and we hold that it is—he should be a man from among the most able and intelligent of the profession, as it is not just to the best men that their work should be judged by inferior ability. The work of an expert is most difficult, and such that many men, although very capable professionally, are not competent to fill the position satisfactorily. No man should arrive at a decision in such an important matter as a competition by superficial means, but by carefully tabulated values. Likes and dislikes should be thrown aside, and a result arrived at by accurate and scientific means. In short, the examination of designs in a competition and the method of arriving at a decision, should become a science. A careful reading of the expert's report on the Confederation Life Assurance competition will explain what we mean. The reader will at once see that there is little of criticism of a professional character throughout the report. He will not find professional words or terms used, or professional reasons given anywhere in the report. It is exactly the kind of report which one would expect from an amateur follower of architecture. In the notes on the different plans sent in, there is no information of any value given. It all has the appearance of being put down because it was necessary to put down something; all points mentioned being superficial and of little account or value in arriving at a decision in such an important matter. Very often they are exceedingly contradictory, for we notice that one design is objected to because it has subsidiary offices on the greater portion of the two street fronts, and yet the accepted design has nothing but subsidiary offices on the Richmond street front with but one exception, and the main office, which is really a subsidiary office, on the Victoria street front. Many architects have found that any office in which a number of clerks are employed, should be removed from the street, as otherwise every disturbance in the street is an excuse for the entire staff to leave their work. The expert considered it very important that the Secretary should be able to command the space in front of the public counter. Why he should do so, it is difficult to say. The conditions do not state that his office must be so placed, but that it is to open off the public space, which is perfectly clear, as all parties having business with the Manager must pass through his room. It would seem from the opinion of the expert that it is a portion of the duties of the Secretary to keep an eye on every person doing business with the Association, that they may not get away with the assets or the building. The chief clerk in the main office can surely look after the clerks, so that the Secretary would not require to give them any attention. The expert has read the conditions where they state that the Managing-Director should be provided "with a retiring room and lavatory in addition," as meaning that he should be provided with a private room with a lavatory off same. He is justified in reading it that way; but as it can be read, and was read as meaning a toilet room, fitted with a w. c. and wash basin, he should not have held that those designs which did not furnish a private room for the special use of the Manager, had not complied with the conditions in such report.

We now propose to discuss the wording of the report to show that the expert did not give a proper amount of consideration in the deciding of the relative positions of the different designs. In speaking of the accepted design he says: "The design bearing the motto "Lux" appeared to me to be in all respects the best, and for the following reasons, namely: All the instructions have been carried out and the drawings have been prepared with considerable skill, and fully express the intentions of the author." Now it has been shown that the instructions were not carried out, but instead very much departed from where they should have been strictly adhered to. A careful examination of

the conditions will not show that this competition was one of draughtsmanship, and yet it would seem that the quality of draughtsmanship was a most important feature in the decision. The drawings may have "fully expressed the intentions of their author," but so did the others. But what has this to do with the competition? We always had the opinion that it was the conception or the design as a whole that should win in a competition, and not the draughtsmanship or methods of expressing that conception. He gives a high position to the plan because the two portions of the building were distinct in themselves, except a portion of sixteen by thirty-two feet. Nearly all the plans show the two portions of the building distinct, as a party wall is as good a separation between two buildings as a tower emphasizing the entrance to a lane to a dry goods store. His contention as to obtaining light and safety from fire by the arrangement shown exhibits his knowledge of the points raised. Many of the other designs had much better arrangements both as to light and safety from fire. We have yet to see the building which can be lighted from a lane 15 feet wide, or which is rendered safe from fire by a space of that width with windows in the opposite walls. Nearly all the points raised by him as being in favor of the plan can be found in many of the other designs in a more highly developed form. He certainly seems to think that an elevation without a tower is rather a poor sort of thing. He places all designs with towers in first position, and those without nowhere. As towers cost money and are not of practical use, their introduction simply means the diverting of funds from other portions of the building, and where the money limit is insufficient to build a thoroughly good building, this should not be done. In this competition the money limit was too low, and consequently the designers who conceived a good design without a tower should receive more consideration than the one who had to fall back upon a tower to give dignity or excellence to his design.

Here are some of the criticisms on the other designs: "Elevation not particularly novel or specially attractive"; "Drawings very carefully made"; "The type-writers have not the full space asked for, 133 feet instead of 150 feet"; "Flat roof throughout"; "The elevations of the main building are of a neat character"; "Elevations are neat and substantial." They give a very fair idea of the method of criticism adopted by the expert. The terms mean nothing, and are of no value whatever. Instead, we should have preferred to have a statement showing wherein one plan excelled another, or was inferior, and a carefully worded and studied criticism of the different elevations submitted. A design which was very much admired at the exhibition, and which was without doubt one of the best in the competition, he dismisses with the statement that "elevations are plain in character." Well, suppose they are plain in character, is not a good design all the more valuable because it is plain in character, more especially when there was little or no money for elaborations? We should like to know on what grounds the expert allowed the design "Utility" to remain in a competition when he threw out so many because they had not the full number of drawings, when the size of the rooms were not figured as called for in the instructions. The expert made a number of very close decisions where they were not called for, and very loose ones when they should have been close. The question of the relative cost of executing the designs does not appear to have been considered by him; for certainly the one selected is not by any means the cheapest. It cannot be built for $300,000, and where he was so desirous of following out the instructions, he should have given the relative cost of the designs more consideration. It is to be deeply regretted that this important competition has resulted so very unsatisfactorily, more especially as the Confederation Life Association did nearly all in their power to make it successful. The profession can console itself with the fact that on the shoulders of one of its own members must be laid the entire blame for the results, such as they are.

We have written the above because it is necessary that the methods of conducting competitions should be closely watched, and all defects pointed out. So long as experts make decisions on no definite plan, but instead follow their own caprice, there can be no satisfactory settlement of this most-vexed question. There have been several important competitions in this city during the past few years, and it can be said that not one of them has been perfectly satisfactory, while one at least has been dishonorable. The rightful winner of the competition has seldom if ever won any of these competitions. So long as this can be said of competitions, they are most harmful to the profession. We purpose to follow out the line which we have taken in this number, and state what our opinions are on the conditions and instructions of all competitions and the decisions of the experts, to the best of our ability. Any professional man who is prepared to assume the duties of an expert, should be prepared to have his report criticized; for if he is not, he cannot be considered a capable and fit person for the position. It is also a matter of great importance to the profession that the best designs submitted in a competition should be erected, as every building erected according to a design, the outcome of a competition, is looked upon as the best work which the profession at the time were capable of doing. Therefore, we have determined that in the interest of the profession and all its members, every competition taking place in this country will receive our attention, that a more definite set of conditions may be the result, and that a more definite line of procedure will be adopted by experts in deciding the relative position of competitive designs. Our columns are open to any person or persons who desire to object to anything we have written above, or who wish to supplement our remarks.

CONVENTION OF THE ONTARIO ASSOCIATION OF ARCHITECTS.

THE first annual Convention of The Ontario Association of Architects was held in the Canadian Institute, Toronto, on Nov. 20th and 21st. Mr. W. G. Storm of Toronto, President of the Association, occupied the chair.

The following gentlemen were present:

Toronto—M. B. Aylsworth, E. Burke, R. W. Gambier-Bousfield, A. E. Boultbee, Joseph Connolly, S. G. Curry, Frank Darling, D. B. Dick, R. J. Edwards, J. A. Fowler, H. B. Gordon, Chas. J. Gibson, John Gemmell, Geo. W. Gouinlock, Wm. R. Gregg, Mark Hall, Geo. R. Harper, Grant Helliwell, G. W. King, Henry Langley, F. C. Law, E. J. Lennox, W. J. Mallory, Robt. Ogilvie, Allmond E. Paull, Herbert G. Paull, James Smith, W. J. Smith, W. L. Symons, Henry Simpson, W. G. Storm, S. H. Townsend, Chas. F. Wagner, Marcel Wilmott, H. J. Webster, A. Frank Wickson, E. A. Whitehead.

Ottawa—Alf. McCall, D. Ewart, John W. H. Watts.

London—Geo. F. Durand, H. C. McBride, S. Frank Peters.

Hamilton—James Balfour, W. A. Edwards.

Kingston—Jos. W. Power.

Whitby—A. A. Post.

Ridgetown—H. F. Duck.

Port Elgin—G. S. Kinsey.

Chatham—Jas. L. Wilson.

Peterborough—J. E. Belcher.

Woodstock—Thos. Cuthbertson, Alex. White.

The Secretary, Mr. S. H. Townsend, read the minutes of the preceding meeting, which were adopted.

The Chairman delivered his opening address as follows:

Gentlemen of the Association of Architects of the Province of Ontario:

As President of this Association, it is my pleasing duty in opening this first annual meeting of the Architectural Association of Ontario to welcome, on behalf of the Toronto members, those of our brethren residing at a distance from this city, many of whom have at great personal inconvenience and expense, and all of whom have at considerable loss of time, responded to the call of the Secretary and are here to-day prepared to take part in the deliberations of this convention assembled in the interests of the profession at large. Before proceeding further in these remarks, I would embrace the opportunity of extending to the Association my personal deep sense of the obligation I am laid under for the honor conferred upon me in electing me the first president of an Association destined in time to take a position amongst the learned associations second to none on this continent—well assured as I am that there is metal and talent in the Ontario profession, that when

opportunity offers will shine equal to the brightest light in any of the other Associations.

In accepting the position to which by your kindness and generosity you have elected me, I am not so vain as to believe that the honor conferred is due to any extra merit in myself, or that I can more fittingly perform the duties of the office, but because of my earnest desire to lend my best endeavors to further the interests of the profession at large in this province. I am very happy in being able to congratulate the profession upon the unparalleled success attendant upon its efforts so far in the formation of the Association. I need not now remind you of the many attempts made in the past to form organizations for the advancement of the art and science of Architecture in this city and province, and their utter failure in every instance, principally I think from two causes—petty professional jealousies on the one hand, and want of energy and interest in the management on the other. Well has it been said by one writer—speaking in reference to the profession of Architecture—that "the modern system of competition and the rivalries of private practice, bring into undue prominence individual interests, until the members of the profession may be described as a number of fortuitous atoms with a strong tendency to develop the antithesis of *esprit de corps*." The formation of this Association will I trust for ever—so far as Ontario is concerned—bury in the utmost depths of oblivion this stigma upon the members of an honorable, and if properly understood, a learned profession.

Nor do we forget that, in the formation of this Association, these re-unions will exercise an elevating influence upon the individual members of the profession, for every member of such a society as this, is by the fact of his membership, bound to make himself useful, and I hold that it is the duty of each of us, as we are in turn called upon, to add what we can to its utility by pouring into the common fund that information which our particular studies may have made us best capable of imparting. Nor is the performance of such a duty entirely unselfish, or by any means without its reward; for omitting the pleasure which every generous mind has in sharing its possessions, there is an isolation to be avoided which would be fatal to each of us if we all pursued a contrary course. "If we persist" says Johnson "in an uncommunicative taciturnity, as we impart no knowledge so we invite no information, but reposing on a stubborn self sufficiency self-centered, we neglect the interchange of that social activity by which we ought to be habitually endeared to one another." At the same time if I rightly understand our object, we do not come here for the idle gratification of a light curiosity, but with the hope of receiving such solid and useful information as may serve to make us wiser men and aid us in the performance of those public and professional, as well as those domestic, social and moral duties, the faithful and energetic exercise of which is not less necessary to our individual success than to the public good.

From its inception this scheme has excited the warmest interest in all the leading members of the profession, and the directorate has entered into the subject with such spirit that I think I am justified in saying that there is hardly an architect of note practicing in this province who has failed to identify himself with the movement. When last year I was appointed a member of a Committee of the Toronto Architectural Guild to consider the question of the formation of an Association with a view to ultimate incorporation, I little thought that in the space of one short year, it would be my privilege to stand before so large an assemblage of the profession gathered from all parts of the province, and be able to say, as I can to-day say, "Gentlemen, our undertaking is no longer a mere Utopian fancy—it is, through the energy and patient working of your directorate, now on the high road to success." We have accomplished as much in twelve or fifteen months as our brethren in the Mother Country have in more than as many years. And are now ready to go to the Lieutenant Governor and tell him that our Association contains practically the whole of the profession in this province; that the public are beginning to call for some guarantee of [illegible] persons calling themselves Architects, and that we are prepared to give them that guarantee; that we have discussed the subject in the most exhaustive manner and think we see our way to a state of affairs that will protect the public from incompetent and unscrupulous men and secure an improvement in the Architecture of the country alike beneficial to the health, wealth and happiness of the people, while at the same time the profession is placed in the position it ought to occupy.

The education and training of an architect should be at once general and technical, theoretical and practical, as it is in other professions. I would ask you is that the case now? Do not men engage in architectural pursuits without the aid of previous training, pupilage, or any formality whatever except the assumption of a title?—the name put up and the thing is done. Does architectural study present such a limited field? Is our profession such a mean acquirement that no special education is necessary? Can a young man "pick it up" as he would expect to do an insurance agency—a land jobber's or real estate broker's business? Emphatically no! To possess the knowledge to build and the skill to plan and design a building, and to deal with the innumerable questions, scientific, artistic, legal and sanitary, which continually present themselves in ordinary practice, a training as arduous and prolonged as that of any of the liberal professions is necessary. Both doctors and lawyers have established an examination covering the general education of candidates for studentship, to ascertain that they have a sufficient foundation to sustain the enormous pile they intend to erect upon it, and we purpose, as will be seen by reference to clause No. 26 of the proposed Act of Incorporation, to adopt a similar test of educational attainments before a young man can enter upon the study of the profession of Architecture.

The public are quite as much interested in the efficient education of architects, as they are in that of physicians and surgeons; indeed, according to the expressed opinion of an English professor, the former is a more important profession than the latter, and accordingly he urged the students to devote their best energies to the attainment of a perfect mastery of every branch of study connected with their profession so as to be able to deal efficiently with the interests which may be committed to their care, because that while to the physician is entrusted the care of the patient after disease has found a lodgment in the system, the architect has charge of the construction of the homes of the community which, from want of a thorough knowledge of sanitary and other kindred matters, may become the hot bed of foul and fatal diseases carrying misery and death throughout the whole neighborhood, instead of being the health—giving homes of a happy and prosperous community.

Medical men tell us that a vast majority of cases of zymotic diseases arise from imperfectly drained or badly ventilated dwellings, and it must be borne in mind that it is not only the first occupants of such dwellings who suffer and often die, but succeeding generations. Is it therefore not important to the public that all of us should be qualified in sanitary science and construction before being allowed to practice?

We do not propose to say that henceforth all who build shall employ an architect, but what we do urge in the interest of the public, as well as of a noble profession, is, that no person shall be entitled to call himself an architect whose name is not enrolled as qualified under an Act of Parliament, and that any persons who wish to employ an architect shall be able, by consulting the official register to ascertain what men are thus qualified?

I take leave here to say that whatever differences of opinion there may be as to the cause, a large section of the public carry on building operations without professional aid. No doubt in the judgment of the profession the public are the losers, but it is equally clear that the profession also suffers loss. My conviction is that this state of things is chiefly owing to the want of status in the profession which the passing of the proposed Act of Incorporation and the full organization of our Association will supply.

The public not only suffer from ignorant practitioners, but the profession suffers from the absence of confidence on the part of the public, engendered by experience of unqualified practitioners. If the public were assured that the guarantee of previous special and technical study was possessed by the members of the profession who are registered on the roll of this Association,

there is no doubt but that the confidence which is now extended to individual members of the profession would be extended in varying degree to all.

In England and upon the Continent of Europe there are buildings which have stood for three or four, aye six or seven centuries, and which command the attention and admiration of the most highly cultivated taste of the present day. Very few of the buildings now erected in Canada have a life of half a century, let alone five or six centuries, and the fact ought to bring a blush to the cheek of every true Canadian. The stone, brick and other building materials at our disposal are quite equal to those used in the buildings referred to. The mechanical powers and scientific knowledge of our artisans and professional men will compare favorably with those of the older countries and past ages. And I am confident that the leading men of the profession in Ontario need not be found wanting either, in purity of design or executive ability should they be called into exercise.

The proposed Act of Incorporation which you have before you, when it becomes law, will enable the public to distinguish between the qualified and unqualified practitioner, and it also provides opportunities for education for the coming generations of architects such as few of us here present have enjoyed, so that a new era in Canadian Art may be looked for, and our children and children's children will proudly point to a Canadian Architecture worthy of the name, as the result of our united effort in securing the incorporation of our profession.

Shall we then remain content to see architecture in its present condition, or shall we rise as one man to set matters right? We are not so optimistic as to suppose that, without much discussion and some compromise, we shall be unanimous upon any scheme, in which so many interests are concerned; but let us endeavor in dealing with this great question, affecting as it does the common good of a great profession, to sink differences of opinion, recollecting the wise saying that "a man who is more than himself, who is part of an institution, who has devoted himself to a cause, expands to the scope and fullness of the larger organization; and the grander the organization the larger and more important the unit that knows that he belongs to it. His thoughts are wider, his interests less selfish, his ambitions ampler and nobler. As a granite block is to the atoms of which it is composed when disintegrated, so are men in organic combination to the same men only aggregated together." A great profession makes great men. Immediately our Act of Incorporation comes into force the compulsory education of the entire profession commences, and the imperfectly qualified men will be stimulated to self-improvement by increasing competition with the better educated, and will be gradually supplanted by a race of cultivated practitioners.

It therefore behooves every member of the Association to exercise all diligence, and strain every nerve to secure the passing of the Act in its entirety. In this connection I wish earnestly to impress upon the individual members of the Association the necessity of securing the active interest and co-operation of their parliamentary representatives. It is also incumbent on us to endeavor by the strictest code of professional honor and *esprit de corps* in dealing one with another or with the public, to command that respect and esteem which should be inseparable from the name of Architect.

In conclusion I wish as President of this Association to tender my cordial thanks to the executive officers and directorate for their prompt attendance at all meetings, and for their ready and kindly advice on all matters affecting the interests of our Association, as should we succeed in carrying the measure during the coming session it will most probably be due in a very great measure to their earnestness and indefatigable efforts."

Mr Burke moved that the following telegram be sent to the joint convention of American Institute of Architects and Western Association of Architects at Cincinatti:

"The first annual convention of the Ontario Association of Architects now assembled sends greeting to the joint convention of the American Institute of Architects and Western Association of Architects, and hopes the fusion of the societies will result in a great advancement of the interests of the profession on this continent."

Mr. Durand seconded the motion, which was carried.

The Secretary read the report of the Board of Directors, as follows:

SECRETARY'S REPORT.

GENTLEMEN: I have begged hard to be allowed to dispense with a report because I feel myself so unqualified to address an audience—even upon the most promising subject—that I am confident that any attempt to deal with the dry details of a Secretary's Leport can only result in your being excessively bored; but the Directors are a hard-hearted lot, and insist upon the report, so that the best I can do for you is to get down to "hard pan" at once, and make the Report as short as possible.

63 architects responded to the call of the Toronto Architectural Guild, and attended the inaugural meeting held in the Queen's Hotel on the 21st of March last—just eight months ago to-day. Of this 63, 59 subsequently became members of the Association, 31 more joined during the month of grace provided for by Mr. Balfour's motion, and one has since been elected in the ordinary manner provided by the By-laws. One member (Mr. Stewart of Hamilton) has since resigned, leaving us a present membership of 90.

So far as I can learn—and I have enquired in every quarter—there are about 20 others practising architecture in the province to a sufficient extent to entitle them to election as members, should they wish to become such. Over half of these have expressed sympathy with the movement, or stated their determination to join the Association, so that our Association contains 82 per cent. of the architects of this province, half of the remainder being favorably inclined to the movement. Or to put it in another way, 93 per cent. of the whole profession in the province are either members of the Assbciation or in sympathy with the movement, with less than 1 per cent. in opposition, the views of the remaining 6 per cent. being unknown to us.

The membership of the Association is distributed as follows: Toronto, 43; Ottawa, 10; London, 6; Kingston, 5; Hamilton, 4; Woodstock, 3; Peterboro', 2; Stratford, 2; Chatham, 2; and Brockville, Napanee, Bowmanville, St. Catharines, Ridgetown, Port Arthur, Owen Sound, St. Thomas, Barrie, Port Elgin, Whitby, Mount Forest and Guelph, one each.

Four meetings of the full Board of Directors have been called, and the Toronto portion of the directorate or executive committee has held eight formal meetings, besides the numerous informal meetings, meetings of committees, &c., necessary in carrying on the business of the Association. So you see your Directors have not been idle or wanting in energy or interest where the welfare of the Association is concerned.

The preparation of the draft Act of Incorporation now before you has of course been the principal business in the hands of the Directors, but two or three other matters of less or more importance have received a share of their attention. Among them I may mention the attempt to place competitions upon a sounder and more equitable basis, because I noticed at the time that one of our newspapers placed the matter in a light altogether foreign to that intended by the Board. A Building Committee advertised for competitive designs for a building, limiting the cost to a sum that no architect having the slightest regard for his professional standing would think of attempting to build it for, and making other conditions calculated to prevent respectable men from competing. The Directors simply pointed out the objectionable features to the advertisers and to the members of the Association, and advised the former to re-consider their conditions, with a view of making such alterations in them as would induce competent members of the profession to compete, in no way meriting the charge of attempting to boycott the public, brought against them by the paper referred to. But I must not enter into the question of competitions, as Mr. Curry intends reading to you a paper on the subject.

The efforts of the Directorate in another matter have been more successful, and I think we have reason to be proud of the collection of drawings we see around us. I question very much if there is an instance on record of an architectural society eight months old being in a position to hold such an exhibition. Yes, gentlemen, I have visited architectural exhibitions both in London and New York, and have no hesitation whatever in saying that I think many of the drawings upon our walls would have compared favorably with the best I saw in either of those places.

Before I sit down, I should like to express my sense of obligation to the members of the Board of Directors for the unfailing courtesy they have shown me, and the unwearied attention they have given to all matters concerning the interests of the Association, particularly to our President and to Mr. Curry, upon whose shoulders a large share of the work of drafting the Act has fallen.

I should also like to say that I have had considerable correspondence with Mr. Hugh Roumieu Gough, the late President of the Society of Architects, London, England, and leader of the movement towards Registration in the mother country, through whose courtesy we have been furnished with copies of the Acts. I feel that we owe him a deep debt of gratitude, not alone for the particular courtesies he has shown us in this matter, but also for the services he has rendered the profession at large, as a pioneer in the cause of Registration.

To the pioneers in every cause tending to the benefit of humanity, the individuals and communities sharing such benefits owe everything; for if there were no pioneers there would be no progress, and without progress there would be no civilization; so that it is by men of this class, by these men with active, expansive minds and large views of life, these pioneers, that the history of states and nations is made.

The Treasurer read his financial statement:

ABSTRACT OF CASH ACCOUNT TO 31ST OCTOBER, 1889.

RECEIPTS. *Dr.*

To subscriptions for first financial year, to 31st October, 1889, eighty-nine members	$445 00
Subscription for second year, to 31st October, 1890, one member	5 00
	$450 00

DISBURSEMENTS. *Cr.*

By Cook & Bunker, for rubber stamp		$ 2 00
" Hart & Co., stationery, etc.		38 55
" C. H. Mortimer, printing		17 00
" Curry Bros., "		6 50
" Postages		2 00
" Balance in bank	$368 85	
" Balance in Treasurer's hands	15 10	383 95
		$450 00

Mr. Durand moved "That the thanks of this Association are due to Mr. Hugh Gough, Secretary of the Association of British Architects, London,

HEAD OFFICES FOR FREEHOLD LOAN AND SAVINGS COMPANY, TORONTO.

E. J. Lennox, Architect, Toronto.

for the courtesy and the valuable assistance he has rendered us. That we honour him for the glorious fight he is making in the cause of Registration, and heartily wish him the fullest success in his efforts."

Mr. Darling seconded the motion, which was adopted.

The Chairman announced that the business of the convention would be conducted strictly in accordance with Parliamentary rule.

ORANGE, N. J., SEWAGE FARM.

Mr. D. B. Dick read an interesting paper on "The Orange, N. J., Sewage Farm."

Mr. Durand proposed a vote of thanks to Mr. Dick for his paper.

Mr. Langley seconded the motion, which was carried.

Mr. H. P. Gordon read a paper on "Foundations."

On motion of Mr. Bousfield, seconded by Mr. Gregg, a vote of thanks was tendered to Mr. Gordon.

This concluded the afternoon session and the evening session was spent in discussing the proposed Act of Incorporation.

SECOND DAY.

On business being resumed Thursday morning, the Chairman invited Mr. Alan Macdougall to address the meeting.

Mr. Macdougall said that on behalf of the Canadian Institute he had much pleasure in welcoming the Association. There could be no doubt that this meeting would be a great advantage to the profession of architecture, and that it would also benefit Civil Engineering. It was a singular thing that the Canadian Institute was originally an Association of Architects and Civil Engineers, such as the one now organized and that one of the promoters was the gentleman who presided over this meeting. (Applause.) There was connected with the Institute a Section devoted to Architecture, composed chiefly of younger students. Last year many of the architects were kind enough to recognize the Section, and to read them valuable papers. There could be no doubt that the helping hand thus lent was of valuable assistance. To the Ontario Association of Architects the doors of the Canadian Institute were thrown wide open. He trusted they would avail themselves of the privileges of the Institute, and that they would examine the museum, so that whenever possible they would send contributions to the interesting collection contained therein.

The Chairman, after thanking Mr. Macdougall for his kind expressions, called upon the Secretary to read the reply which had been received to the telegram sent to Cincinatti.

Mr. Townsend read the following reply: "Your telegram received with enthusiasm a few minutes ago, during evening session of the reorganized and enlarged American Institute of Architects, who reciprocate your good wishes and return cordial greetings." (Applause.)

The Secretary read letters from two gentlemen regretting their inability to be present. They were Mr. J. A. Ellis, Meaford, and Mr. F. J. Rastrick, Hamilton.

Mr. Bousfield read an instructive paper on "Office Management."

Mr. Gordon moved a vote of thanks to Mr. Bousfield for his very excellent paper, and "that the new Council take into consideration the feasability of preparing a standard form of certificate."

PROFESSIONAL ETHICS.

Mr. Burke read the following paper on "Professional Ethics:"

The 17th Congress of German Physicians held a year ago last June adopted a code of ethics, a summary of which is as follows: "Every kind of public laudation, whether it proceeds from the physician in question himself or from others, and continued advertising in public papers are to be reprobated." *Secondly*, The designation 'specialists,' for puffing purposes is to be reprobated. *Thirdly*, The public offering of medical assistance *gratis*, underbidding in concluding contracts for sick societies and the like, offering advantages of any kind to a third person in order to procure practice, are inadmissible. *Fourthly*, The ordering and recommending of secret remedies are inadmissible. *Fifthly*, Any attempt of any kind on the part of a physician to intrude upon the practice of another is dishonorable, especially in the case of one who has acted as substitute or in consultation. A practitioner must by no means undertake the treatment of a case without the express consent of the previous physician. A specialist called for a definite part of the treatment must strictly confine himself to that. *Sixthly*, No physician is at liberty to make disparaging remarks to others about another physician.

The spirit of this code is well worthy of emulation by the members of the Ontario Association of Architects.

In dealing with the ethics of our own profession we have to consider them in three relations, 1st. with our client; 2nd, with the contractor; and last but not least, with *each other*.

The first duty in our relations with our client is a strict and unswerving loyalty to his interests. We are retained to guard his interests and to enable him to obtain a building which will answer his needs and purposes in as complete a manner as the funds which he places at our disposal will permit.

To this end we are morally bound to possess ourselves to the fullest possible degree of his ideas and requirements. To do so will to a very great extent prevent misunderstandings, and avoid disagreeable *recontres* and possible litigation.

The second duty in this relation is to ourselves. We must have self-respect. We must not be mere draughtsmen. As long as we are retained in charge of the work we must insist on being its director. We must insist on our right to interpret the meaning of the drawings and specifications, and should not fear to run counter to the desires of the client should he attempt to deal unfairly with the contractor.

Our relations with the contractor require for their happy continuation, firmness and justice.

To exercise firmness requires that we should have mastered the art of building. We should know when we are right and he is wrong, and knowing our position, should in all kindness insist on obedience to our instructions; always acting with discretion.

Justice demands that we should not make the contractor a scape-goat for our own ignorance or delinquencies.

That clause introduced into some specifications, "work not shown on plan but obviously necessary is to be executed without extra charge" is often a cloak for incompetency or carelessness on the part of the architect, and should be expunged from the folios of all self-respecting architects. How is the unfortunate builder who night after night hurriedly dashes through the specifications of various architects in the frantic effort to obtain a job, to pick out and estimate for items which the architect should have inserted had he exercised a very moderate amount of diligence and care?

In a paper prepared by Mr. O. P. Hatfield, architect, of New York, and read before the convention of the National Association of Builders at Philadelphia last February, the following remarks are very much to the point. He says "Although the architect really is, in his superintendence of a building, the agent of the owner, being in his employ and looking to him for compensation for his labors, yet he should not forget that he is also an expert and umpire, who is expected to maintain always a judicial frame of mind and dispense even-handed justice in all his decisions as between the owner and the contractor. He is supposed to be familiar with the best methods of executing the several divisions of work that enter into the construction of a building and with the characteristics of the best qualities of materials as well as with those of the inferior qualities, and therefore capable of giving an unbiased opinion as to their merits, which, in most cases, the owner is not. The latter, therefore, relies upon the judgment, knowledge and experience of his architect to give a fair, honest and just decision upon all questions that may arise as affecting his interest or those of the building during the progress of the work. The architect must be a man of character; his integrity must be beyond question, his judgment must be good, and his store of acquired knowledge in the line of his profession full and ample. The just mean of favor toward the two parties to the contract will then be observed by him, and the work will be brought to a close to the satisfaction of everyone. The owner will possess a solid substantial building, and the builder, in addition to his cash profits, will have received a wider endorsement of his already good reputation."

Justice requires that we should protect the contractor who has obviously made a serious error in his estimate. It is our duty to advise the client to reject such tender and to advance valid reasons for this advice.

The unseemly display of temper and the use of language unworthy of a self-respecting man is to be very greatly deprecated. Of all men the architect from his position should have his temper well under control and should be choice in his words, especially when in the presence of the workmen. Many occasions arise when most exasperating mistakes are made or when wilful evasions of the contract occur, but such are no excuse for the forgetfulness of his position and dignity. A few calm and decisive words will carry far more weight than any amount of ranting or swearing.

The acceptance of fees or compensation from the client only is the one item in the code which must be strenuously insisted upon. On this "hangs all the law and the prophets" of the honorable practice of the profession.

The architect or rather the apology for one who so far lowers himself as to accept remuneration, direct or indirect, from the contractor or materialman, is fit only to be placed outside the pale of the profession.

The moment he places himself under an obligation to these parties he becomes their servant, his judgment is warped and his independence throttled—he cannot serve two masters, and if he fails of strict allegiance to his client he cannot be just to either.

Should such a transaction come to the knowledge of the client he cannot but lose confidence in the integrity of his architect, and the man who offers the bribe will despise him, treat him with scant courtesy and all the while lose no opportunity of scamping his work.

The bribe-receiving architect is the *pariah* of the profession—we must have no fellowship with him—the skirts of the Association must be kept clean in this respect.

Our relations with *each other* to be satisfactory and pleasant, require a careful observance of the golden rule "Do unto others as ye would that they should do to you."

Some of the points in this phase of the ethics of the profession to be observed in a most punctilious manner are as follows:

1st.—The careful avoidance of taking work from others.

2nd.—No competition in fees.

3rd.—No architect should so forget himself as to make disparaging remarks to others about a brother architect.

4th.—No unprofessional advertising.

In regard to the first point, the avoidance of encroaching on another's preserves, we need to be most careful and conscientious. If for instance a prospective client having had recent dealings with another architect has come to us with the same work, we should, before accepting the commission be sure that the way is clear, and that our predecessor has been honorably settled with. We should also communicate with our predecessor, explain the situation, and guard against doing him an injustice.

As to the second point, *competition in fees*, we need to give out no uncertain sound. If a prospective client asserts that A and B offer to do his work for 3 per cent., we should choke down our lust for more work, quietly give him the regular and usual terms, and let him go about his business if not satisfied. A man is usually valued at his own assessment, and the client who insists on having a cheap architect usually gets value for his expenditure. An architect cannot do good work and make a fair living who persists in working for less than the customary fees. If we see such an one taking work year after year and apparently flourishing in business, there is good ground for the suspicion that his percentage is augmented from sources which are not legitimate.

With reference to the third point, how few of us can claim that our skirts are entirely clean. It is very easy to drop a disparaging remark about a brother architect or his work. His faulty specification is a good torch to illumine *our* immaculate productions, his broken beam will make a good ladder on which we may mount to fame, his cracked wall will enable an admiring public to peep across to *our* stable structure, and his various lapses will enable us to stuff the ubiquitous reporter with tales of *our* remarkable success, first in far-off lands, and now in our adopted city. The witness box is a place where we can do a brother architect great service or great injury. Some architects appear to take a savage delight in the discomfiture of a brother against whom they have been subpœnaed as a witness. This is neither generous nor kind. While nothing should prevent his speaking the truth, he should do it in all kindness, excusing, making allowances and even defending, where possible, if he can do so without violence to his conscience.

As to the fourth point, professional advertising, custom sanctions only the professional card, as with lawyers and doctors. The innovation which occasionally flares out on a gaudily painted sign, check-by-jowl with

Smith's boiler or Jones the mason, and Brown the carpenter, is to be condemned. It is *unnecessary*. If the building has merits and pleases a person who is on the look-out for an architect, he can easily discover by a few enquiries the address of the designer. At the same time, it is a question if an architect should not have the right to affix his name in a modest manner to a building after it has been completed, as an artist does to a picture which he has drawn or painted.

The public should with equal reason have an opportunity of knowing the name of the architect who designed a Gallery of Art, for instance, as they have of knowing who painted the pictures in the rooms within. The result of the building has been arrived at with perhaps a far greater expenditure of energy and brains than the completion of the picture, and certainly has required more versatility, the architect being artist, constructor and business man at one and the same time. It would add immensely to the enjoyment of a visit by an architect to a strange city, were he able to discover on each building of interest to him the name of the designer, made familiar to him perhaps through the architectural journals, and now coming before him almost like an old friend.

The following extract from the address of Mr. Cutler, President of the Western New York Association of Architects, at their convention last February, is appropriate to the general tenor of this paper. He says: "What is needed, then, to prevent the ravages of unreasonable competition 'from wasting at noon day,' is the full development of the professional idea, and to this end association and acquaintance are to be cultivated, and will, I believe, answer every good purpose. Any qualified architect who devotes his time to doing well what comes to him, and spare time to study, will not wait long for plenty to do, and has no time to run around looking for work. And right here is the difference between the trade view and the professional view. The commercial architect is for revenue only. He hunts an intended house or church builder as a sportsman would game, and not only this, he will steal the legitimate game of another hunter, and if necessary stab the owner in the back. The professional architect maintains the same attitude with regard to obtaining business that characterizes a reputable lawyer or doctor. He will be just as careful not to forget his competitor's rights, as a doctor would be to consider every chance of transgressing the ethics of his profession before taking charge of a case. I believe that every young architect who will choose to identify himself with the last-named class will not only do better in the long run from a financial point of view, but will be much more comfortable and content with his calling."

It is most gratifying to be able to add that we are already awakening to a more careful observance of the ethics of the profession. The contact with our fellows in this Association is making itself felt. We are less rivals and more brethren, we are better known to each other and more respected; we are more united, and better able to secure public recognition and appreciation; we are more self-respecting, and have undoubtedly taken a higher place in the community in consequence.

Mr. Gordon moved a vote of thanks to Mr. Burke for his very excellent paper. He thought the paper should be in the hands of every member of the profession.

Mr. Paull seconded the motion.

Mr. Bousfield said he was exceedingly glad that this matter had been brought up. It was a subject that all should take deeply to heart. He had tried at the first meeting to have something of the kind inserted in the by-laws, but it was thought advisable to leave the whole matter in the hands of the Board. As yet they had not done anything, but it was to be hoped they would move before long. He might mention a case which came to his notice this year. A certain gentleman who had been talking for six months about building a house, asked him if he would carry out the work. In four visits this gentleman occupied half an hour each time in talking about the details, and as to how he should proceed to borrow the money he needed. The building was to cost only $2,500. After all this fuss, the gentleman said he would like to have plans prepared before anything definite was done, and he would compare them with plans a young man was getting out for him. He replied that he did not care to compete for so small a job, and did not want anything to do with it. The next question asked was, "Whatare you going to charge?" To this the reply made was "5 per cent." The gentleman then left and got the young architect to do the job for 4 per cent. The inexperienced man ran the cost up to $3,000, so that he got $120 as the four per cent. commission, whereas had the work been done by an experienced man, the fee at five per cent. would have been $125, and the work would have been done for $2,500.

Mr. Langley said that the practice of announcing the names of the architect and contractor by enormous signs on new buildings had struck him as a very strange proceeding.

The Chairman put the motion for the vote of thanks and it was carried.

Mr. Bousfield said he had noticed that the *American Architect* advocated the names of architects being put upon buildings, though not necessarily in a conspicuous position. He thought a modest sign on important buildings would not be objectionable.

Mr. Langley moved, seconded by Mr. Gordon: "That this Association condemns most unequivocally the practice lately introduced into this city by some architects, namely, that of advertising on conspicuous places on new buildings while in progress, as being beneath the dignity of the profession. At the same time, we cannot take exception to an architect attaching his name in a modest manner to any building erected by him."

Mr. Burke said he was going to suggest that it would be a good idea if the association were to recognize some position in which a tablet could be placed. Then a visiting architect would know where to look for the name.

The motion was carried, and the Association adjourned for lunch.

AFTERNOON SESSION.

The Association resumed at two o'clock.

Mr. Durand moved; seconded by Mr. Peters, that whereas it is necessary that funds should be provided for meeting the expenses of legislation *re* Act of Incorporation, be it resolved that the Secretary send notice to each of the members of the Association requesting that the annual dues for 1890 be paid to the Treasurer on or before the 1st day of January, 1890. The motion carried.

The chairman announced that the next business would be the choice of the next place of meeting.

Mr. Watts moved that Ottawa be the next place of meeting.

Mr. Bousfield moved that the next annual meeting be held in Toronto for the reason that it was most convenient for the majority of the members.

Mr. Durand said that if he had any idea that the Association would assemble in sufficient numbers at Ottawa, or London, to form a quorum, he would favor those places. He thought the next meeting should be held in Toronto, and then with increased numbers and influence they could go elsewhere.

Mr. Peters thought that until the Association was in running order it should meet in Toronto.

Mr. Edwards also favored Toronto for the present, and thought that some time in the future they might go to Ottawa.

The Chairman said that an additional reason for having the next meeting in Toronto was, that if the Act were passed, it might be necessary to call a meeting immediately to form the new association under it, and that meeting should be held in Toronto.

The motion to hold the next meeting in Toronto was carried, three votes only being given against it.

POWELL V. BOWMANVILLE.

The case of Powell v. Bowmanville being on the Agenda for disscussion, the Chairman said it would not be wise to discuss it as it was at present *sub judice*.

Mr. Smith asked permission to explain to the Association a similar case. Mr. Powell and himself occupied a somewhat similar position. They were both before the courts appealing against the judges upon certain points of law. These points were raised by the same body of men. The Board of Education of Bowmanville asked for competitive plans for a ten roomed school. On the eve of the reception of the plans they by resolution changed their request to that of a twelve room school. They returned the drawings, and asked to have them remodelled to a twelve room school. He was unfortunate enough to be among the competitors, and still more unfortunate in having his drawings adopted unanimously by the Board. He was invited to attend a meeting of the Board with a view to discuss changes, and he attended. On the original drawing he had only allowed for sufficient room in the basement for the purpose of heating and ventilation. The Board decided, however, to have the whole basement excavated, to have a concrete floor, and to have the basement lighted from a large number of windows. In consequence of these changes he laid aside the old drawings, and made new ones in accordance with the changes desired. The excavations were done, and tenders for the work were called. The original estimate was $18,000, but the tenders on the amended plans were far in excess of that sum. The consequence was, that although a portion of the work had been done, they threw out the plans and asked for more drawings. They then dealt with Mr. Powell, who had been the successful candidate at the first competition, and treated him in the same manner. Suit was brought to recover the percentage due to architects for the work done, and the judges held that as the Board had not accepted the plans under its corporate seal, it was not liable, although the minutes of its meetings showed it had accepted the plans. This decision was now being appealed from. This was a point which it might be of value for architects generally to note, namely, the importance of the seal of corporate bodies being affixed to their documents.

The Secretary read a letter from the publisher of the CANADIAN ARCHITECT AND BUILDER informing the Association that it was proposed to issue a weekly sheet for the purpose of affording architects and others desiring tenders, a more frequent medium of communication with contractors.

Mr. Bousfield said that the Association had formally adopted this paper as their official organ, and therefore it was in their own interest to support it. At present there were in Toronto half-a-dozen newspapers, and if it was desired to reach all the contractors it was necessary to advertise in all those newspapers, and even, then perhaps, the purpose of the advertisement would not be properly served. By the adoption of a regular means of communication between the architect and contractors, the latter would know where to look for advertisments of tenders wanted. It was proposed by the ARCHITECT AND BUILDER to issue a weekly edition for this purpose. If the architects would agree to place all such advertisments in this sheet, it would be a great advantage to their official organ, and they would receive a benefit in the improved paper they would eventually get. He therefore moved: "That this Convention approves of the weekly sheet edition of the CANADIAN ARCHITECT AND BUILDER for the purpose mentioned in the letter read, with special reference to the subject of advertising for tenders, agreeing hereby to use the same as their medium of communication with contractors."

Mr. Burke speaking in support of the motion said that he would like to see the CANADIAN ARCHITECT AND BUILDER issued every week. It contained a great deal of valuable material, and much other valuable material might be published. He would be glad to subscribe towards the additional cost of the weekly edition, but in default of that, cordially supported the weekly sheet. The motion carried.

ELECTION OF OFFICERS.

The election of officers was proceeded with by ballot, Messrs. Duck and Bousfield acting as scrutineers. The election resulted as follows:—

President,—Mr. W. G. Storm (unanimously.)

Vice Presidents,—Mr. Geo. F. Durand, London; Mr. James Balfour, Hamilton; Mr. King Arnoldi, Ottawa.

Secretary,—Mr. S. H. Townsend, (unanimously),

Treasurer,—Mr. D. B. Dick, (unanimously).

Directors,—Messrs. E. Burke, Toronto; Joseph Powers, Kingston; S. G. Curry, Toronto; D. Ewart, Ottawa; J. E. Beleher, Peterboro.

Moved by Mr. Durand seconded by Mr. Wilson, that the auditors be Messrs. H. Langley and W. R. Gregg. Carried.

This concluded the proceedings and the Convention adjourned *sine die*.

THE BANQUET.

The visiting architects were entertained by the Toronto architects at a banquet in Harry Webb's restaurant, on Thursday evening, Nov. 21st. An excellent *menu* was provided. The President, Mr. W. G. Storm, occupied the chair, and around him was a large representation of the Association, as well as several members of other professions.

The substantial part of the evening's entertainment having been disposed of, the Chairman called upon the company to honour the Queen by loyally drinking her health. This was followed by the singing of the National Anthem.

The Chairman announced that the next toast would be "The Ontario School of Engineering," and that Prof. Galbraith would respond.

Prof. Galbraith replied that the toast was one with which he was very familiar. After conveying his thanks to those present for the hearty way in which it had been received, he said he was glad to be able to tell those present that the additions to the School of Science were being rapidly proceeded with. They expected in two or three weeks to have the building roofed. There was, therefore, a good chance of the building being ready for occupation early next year. The work proposed to be done in the building was somewhat as follows: There was to be an extension of the Civil Engineering Department, a new department of Mechanical Engineering to be established, and a School or Department of Architecture. These were the three branches that would be provided for in the new school. At present the work in the Civil Engineering Department consisted simply in lecturing, with a certain amount of experimental work that was useful in professional engineering, but was not strictly professional work—such as chemistry, physics, electricity, light, heat, sound, etc. It was proposed to establish an Engineering Laboratory, which would be divided into two portions, one of which would be for the testing of the materials for construction—for testing the strength of iron and steel in various forms, and bricks and stones and ordinary materials used by engineers and architects. Again, there would be means of making other kinds of tests, such as comparing the efficiency of lubricating oils. Another feature would consist in an experimental steam engine and boiler from which experiments may be made in the measurement of power, fuel, etc. This engine would be capable of working under various conditions, and experiments would be made as to cost and power under the various conditions. These would be the principal portions of the new laboratory—it would be altogether for measuring and testing. In connection with it, there would be a small machine shop for the purpose of testing tools and making small repairs. It was not intended that this laboratory would give the student a practical knowledge of Engineering. For that they would insist upon every student spending at least one year in the ordinary shops. With reference to the architectural portion he had not given to it much thought, for the simple reason that he did not propose to do any special architectural work. He was not an architect, but he took the portion of the work common to it and civil engineering. He was not prepared therefore to give details of what would be done. He fancied it would be something like this: He had from experience formed an opinion as to what should be taught in a professional school, and he had no doubt it would apply to Architecture. He had noticed in some schools an attempt being made to turn out professional men fully equipped for their profession. He did not believe that had proved a success. Only one thing and only one kind of training could make a practical man, and that was practical training. (Applause). There was no such thing as make-believe practice. There was a want of reality and a want of responsibility about it. After all, it was the feeling of responsibility that made the practical man. When he was held responsible, he felt the weight upon him, and he could not feel that responsibility in the school. A man might go through the most intricate problem in the school without feeling in any way the importance of it, whereas when he went out to practice he might be floored by the simplest problem because he was held responsible. He therefore thought it was a mistake for a school to attempt to complete the practical part of a man's education. The work which should be done in the professional school should be, to give the student that training which he would find necessary, and which he could not get from practice. In the architect's office a young man picked up a knowledge of the business only by learning the use of the instruments, drawing and planning. But he found that if he wanted to be a first-class man he must learn other things. He tried various kinds of self-study, but was unsuccessful. If he was a genius, he might get along all right, but the average man was not a genius. The school should supply this man's defects and provide him with just what he wanted. The object of school training should be to enable the student to utilize to the best advantage all the knowledge he can acquire from books and from other sources. In the new department the general lines adopted by other Architectural Schools would be no doubt followed. No doubt they would be governed by local circumstances, and they would be happy to hear and consider all suggestions from the profession. (Applause.)

Mr. Peters sang "A Courting We Must Go."

Mr. S. G. Curry was called upon by the Chairman to introduce the next toast. He said it devolved upon him to propose the health of "The Engineering Profession." With this was coupled the well known name of Mr. Alan Macdougall. What had just been heard from Prof. Galbraith would convince almost all that Engineering and Architecture were to a large extent allied. That gentleman evidently believed that a great deal could be taught in the Engineering Department that would be useful to architects. With that he (Mr. Curry) was entirely in accord. For the first two or three years, the two classes could go along together. There was no reason why the students should not attend the same class for some time. In time the Engineering student would reach work of a higher character in his own special line than was necessary for a student of Architecture, and there they would separate. Very few students of Architecture to-day had a thorough knowledge of the theoretical part of the business. Whatever knowledge the average student obtained, it was a sort of rule-of-thumb method. All they knew was that a certain thing was done in a certain way, and that was as far as their knowledge carried them. It was not sufficient to know that one building stood on a certain foundation, and to guess that all others could be supported in the same way. The fact that a building remained only showed that the material was capable of doing the work required of it. No material should be taxed more than one-third of its actual capacity, and it was necessary for an architect to know what that capacity was. Prof. Galbraith was perfectly correct in saying that it would be impossible for a student to receive at school all the training necessary for practical work. Make-believe work was of little or no value. When a man was actually engaged in practical work, the responsibility compelled him to put forward his best efforts. The success of the new school would depend in a large measure upon the man appointed to the chair of Architecture. That man would have within his power the ability to do more for the profession than any fifty architects in this province. He would have an influence which could only be calculated as time passes and as the work shows itself. He would have an influence not only in making capable men, but in training them in what was honorable and just to their fellow-men. It was a difficult thing for a man who had been accustomed to look upon things in a commercial way, to realize what were his professional duties to others. If a student were properly trained in the school, he would endeavor when he came out to work in a way that would bring credit upon the profession. He hoped that the Architectural Department would have at its head a gentleman as capable to fill that position as the gentleman who now occupied the chair of Engineering in the school. (Applause.)

Mr. Alan Macdougall in replying to the toast, said he was more than gratified at the cordial way in which the toast had been received. The profession of Architecture was closely linked to that of Engineering. The duty of the architect commenced, as the historian Ferguson had said, just where that of the engineer ended. The engineer gave strength to the structure, while the architect stepped in and added symmetrical proportions to the building. The one profession was indispensable to the other. The architect designed the building, and the engineer constructed the girders which were necessary for the carrying out of the plans. He had listened to Prof. Galbraith with much pleasure. He was more than pleased at the cordial reception which his remarks had met with. He knew that Mr. Curry had voiced the opinions of all present, and that it was the earnest desire of all to lift the profession out of the Slough of Despond. The magnificent work which Prof. Galbraith was doing in the School of Science was opening a new era for Engineering. Another important step was being now taken in the formation of the School of Architecture. The application for an Act of Incorporation, if successful, would give dignity to the profession. He would gladly and willingly help them in this effort, and sincerely hoped they would be successful. He trusted that in the Association they would cultivate the student class, and wherever possible, assist the younger members. The question of professional education was one of great importance. In England a great deal was being done, and in America a great deal was being said upon the subject.

The Chairman invited the company to drink to "The Sister Professions."

Mr. J. W. Curry was called upon to reply, and said that on behalf of the legal profession, of which he was a member, and on behalf of the other learned professions, he thanked them for the honour they had done them. He was particularly interested in the new Association, from the fact that a near relative was a member, and the fact that he had had a good deal to do with the drawing up of the proposed Act of Incorporation. It had been a surprise to him since he had come to consider it, that the architects of this province had not sooner recognized their rights and demanded them from the Legislature. The time had come for the profession of Architecture to take the same position as other professions. If the legislators of Ontario could see the present gathering, they could only arrive at the conclusion that such men were entitled to incorporation. There could be no doubt that in order that a profession should advance, the members of that pro-

fession should be closely joined together. They were entitled to claim incorporation as nothing less than a right. If they let the Legislature know they meant to have their request granted, and intend to keep asking until it was granted, they would have less trouble in getting it. Each member could bring influence to bear upon the legislators. They were entitled to claim from their representatives a full consideration of this matter, and once fully considered, there could be no doubt as to the result. He hoped that the proposed Act would fully answer the purposes for which it was intended. (Applause.)

" Commander Law favored the company with a song, " Hearts of Oak."

The Chairman proposed the health of " Our Guests."

Mr. Durand, in replying, thanked the company on behalf of the guests. After the fine addresses which had been delivered he could well be excused from making any extended remarks. As the guest of the Toronto architects, he had always enjoyed the generous hospitality they displayed. He was sure that all had been much benefitted by the papers that had been read at this convention. He considered the progress of the infant Association during the eight months of its existence as far beyond the expectations of even the most sanguine members of the profession. When the movement was started eight months ago, none expected that it would have reached so advanced a stage in so short a time. To the Toronto members, in conclusion, he wished to say that he was at all times pleased to be their guest.

Mr. Belcher, of Peterboro', felt that the Toronto members had showed themselves to be thoroughly hospitable, and he hoped that some day he would have it in his power to return the compliment in a fitting manner. He was sorry to say that the locality from which he came was so small that they were not in a position to properly receive the Association, but he hoped that some day they would be able to give the members a sail around the beautiful lakes in the vicinity. (Applause.) He was sure they would be well pleased with the visit.

Mr. Watts said that during the last fifteen years he had always found the Toronto architects open-hearted and generous. He hoped that the day was not far distant when the Toronto members would stand in the same position as he now did, and respond to the toast " Our guests." He then favored the company with a humorous story and a song.

Mr. Ewart added his thanks to those of the other guests who had spoken.

Mr. Paull proposed the health of the President, and in doing so referred to the Toronto University building as a monument to his professional skill and genius.

Mr. Storm thanked the company for honoring him. The reference to the University building which was completed some forty years ago, would make some people regard him as being advanced in years, whereas he was one of the young men of the Association. (Laughter and applause.) He felt very deeply the kindness of the Association in electing him to the position of chief officer, and assured them that he would do the best in his power to carry out the ideas of the Association and secure the Act of Incorporation at the coming session of the Legislature. (Applause.)

Mr. Burke proposed the health of one who was known as a " worker " in the society—the Secretary, Mr. Townsend.

Mr. Townsend, in responding said, that a little more than a year ago when the proposed legislation was talked of it was said there was no chance of its being secured. To-day when he looked at the work of the past year he could see that they had placed themselves in workable form and would soon be able to put Canadian architecture in the position it should occupy. He thought they over-estimated his efforts. (" No.") He had done all he could and wished he had been able to do more. He thanked the members for their confidence in him.

Mr. Bousfield in proposing the toast of " The Press " took occasion to say some very kind things about the CANADIAN ARCHITECT AND BUILDER.

Mr. C. H. Mortimer responded.

Mr. Curry proposed success to the new " Act of Incorporation." After this had been drank the company sang " Auld lang Syne " and separated.

THE EXHIBITION OF ARCHITECTURAL DRAWINGS.

THE exhibition of architectural drawings held in connection with the first convention of the O. A. A., in the Canadian Institute, proved to be a valuable and instructive collection, and may be considered in many respects equal to similar exhibitions held in cities of a much larger growth than Toronto.

The growth of this city has been phenomenal. Private residences, business establishments, public and religious buildings are here projected and built up from day to day and year to year, so that the field for the architect has been and doubtless will continue to be an exceptionally good one. Already the Queen City has within its precincts numerous evidences of advanced taste and culture in architectural monuments which the citizens may well be proud of, while the next two or three years will witness the completion of still grander edifices.

The exhibition of drawings was varied and comprehensive, every department of the drawing office being admirably represented. The series of colour drawings of post office and other Government buildings kindly lent by Mr. Fuller, of Ottawa, are specially fine, and from an artistic point of view, were the attraction of the exhibition. While the subjects, naturally, from their mathematical exactness, are not usually chosen by artists for their pictures, the taste and skill shown in coloring these excellent drawings prove Mr. Fuller to be as much artist as architect.

Messrs. Darling & Curry's large perspective drawing in " pen and ink " of their Parliament Buildings, is an example of another style of architectural draughtsmanship, now much in vogue. Mr. Darling, the designer and draughtsman, has won laurels in the estimation of those best able to judge, by his skilful execution of this design. Beneath it is a well drawn geometric elevation of the building.

Accompanying this exhibit is a large folio of some eighteen sheets of working drawings in full detail, prepared with much care and ability, a revelation to the uninitiated of the labor and forethought, skill and ingenuity entailed in the preparations for the erection of great buildings.

Mr. Storm, the President of the O. A. A., exhibits among other drawings, some wonderful free-hand drawings of the interior of Osgoode Hall. How few of our students of to-day are possessed of the necessary pluck and patience to produce such work as is here displayed. A charming effect in this pen and ink drawing is obtained by the use of diluted ink for the distance, similar to that obtained by the use of the " roulette " in drawings for photo-engraving.

Mr. Lennox shows the large colour perspective of the Court House, well known to us all. His effective coloring and clever painting of the surroundings, gives the beholder an excellent idea of the ultimate appearance of this fine structure of the Richardson type.

Messrs. Langley & Burke exhibit a number of drawings in various styles of draughtsmanship, among which we are pleased to notice the pen and ink work of their student, Mr. J. C. B. Horwood, which bespeaks talent worthy of encouragement.

The colored perspective of the new Upper Canada College by Mr. George Durand, of London, is a particularly bright and pleasing picture, and shows great facility in the handling of the brush—a distinguishing feature also in the residence of Mr. Labatt. The college is rather residential than scholastic in design, and seems to lack that nobility of effect which we would desire in our Alma Mater.

Mr. Balfour, of Hamilton, has two or three sets of drawings, among which is a court house design drawn with great freedom and spirit by Mr. D. A. Gregg, but lacking in effective contrasts. The Hamilton Court House, by the same architect, is a well proportioned design, and shows fine drawing.

Mr. J. W. H. Watts, of Ottawa, sends a number of lithographs of decorated interiors and designs for art furniture. The drawings are elaborate, but lack freedom and vigour. The only set of measured drawings are sent by Mr. A. M. Calderon, of Ottawa, the subject being " Stone Church, Kent."

We noticed some artistic sketches by Messrs. Edwards & Webster. The massing of shadows more in accordance with the principles of nature would, however, materially improve these sketches.

A sepia sketch of the City Hall and Law Courts, San Francisco, Cal., by Mr. Fuller, is a wonderfully clever bird's-eye view of a clever design, cleverly adapted to a peculiar site.

An excellent example of ye old time Manor House is Mr. McLaren's house at Perth, by Messrs. Darling & Curry.

The competitive designs of the Confederation Life Assurance building and of the Board of Trade occupy considerable space. But criticisms on these would be somewhat superfluous here as they have already been subjected to professional criticism.

We were amused to see Mr. Paull's Salvation Army Barracks hung cheek-by-jowl with photographs of the glorious old St. Mark's in Venice, but we suppose this to be a little joke on the part of the hanging committee.

Space prevents our giving allusions to the many excellent drawings which line the walls.

OUR ILLUSTRATIONS.

HEAD OFFICE FOR THE FREEHOLD LOAN AND SAVINGS CO.

THIS building will be seven stories high. The interior will be constructed of iron frame work and fire proof brick, in a new and novel manner. The construction will be so arranged that one or more, of even the entire partitions throughout any flat, can be removed without affecting the construction of the other floors. Every accommodation is provided for the occupants—vaults for all offices, private lavatories on all floors, and public lavatories for male and female on top flat. There will be two iron passenger elevators. All staircases will be wrought iron with marble steps. The main entrance will be about 20 feet wide, forming a handsome archway, and will have marble staircases, and marble floors and walls. The exterior will be constructed of Connecticut and New Brunswick brown stone, and a selected quality of new colored brick. E. J. Lennox, architect, Toronto.

" CANADIAN ARCHITECT AND BUILDER " COMPETITION FOR PLASTER CORNICES AND CENTER PIECES—PREMIATED DESIGN, BY "CIRCUS" (THOS. R. JOHNSON), TORONTO.

PROPOSED ARCHITECTURAL CLUB.

There has been a growing feeling among the younger members of the profession in Toronto, favoring the formation of a new Architectural Club. A representative meeting of those interested was held in the Canadian Institute on December 5th, to discuss and formulate ideas on the subject. Mr. S. G. Curry, on request, took the chair and opened the meeting by some thoughtful and pointed suggestions. A lively exchange of opinions followed, in which a large number of those present took part. The prevailing sentiment seemed in favor of an organization which would embrace in its membership all those engaged in the practice and study of architecture, as well as members of that large class who are indirectly connected with the mother art. By including the latter, it was thought that the engineering and artistic elements of the club might be individually strengthened. The architect, the sculptor, the decorator and the mechanic could meet on a common ground, and aid each other towards a higher standard of thought and design. Regarding the objects and methods of the club there were many suggestions and a good deal of debate. Competitions to be held at least once a month, were generally conceded desirable, as also regular debates or lectures on technical subjects. It was suggested that the club be made attractive by the establishment of classes in pen and ink, water colour and modelling in clay, and also by keeping professional papers on file, and by the development of the social and friendly relations of its members. To do all this successfully, permanent club rooms were deemed necessary, and it was thought if located up town they would be more convenient to the mass of the members. It was not expected that the proposed club would be in any sense a rival of the Architectural Guild of Toronto. Working with different ends in view, and with a less restricted membership, it was hoped not only to receive its support and favour, but also to include on its roll many members of the older association.

A committee composed of Messrs. Jarvis, Lennox, Gibson, Dawson, Goldstone, Gregg, Brown and Cowtor was appointed to make the necessary arrangements for organization, and everything points to a successful outcome of the new venture.

A meeting to be held in the Canadian Institute, is called for Friday evening, December 20th, and all interested are cordially invited to be present.

THE LAW AS TO PARTY WALLS.

A PARTY wall in law is a wall dividing lands of different proprietors, used in common for the support of structures on both sides. At common law an owner who erects a wall for his own buildings which is capable of being used by an adjoining proprietor, cannot compel such proprietor, when he shall build next to it, to pay for any portion of the cost of such wall. On the other hand, the adjoining proprietor has no right to make any use of such wall without consent of the owner, and the consequence may be the erection of two walls side by side, when one would answer all purposes.

This convenience is often secured by an agreement to erect a wall for common use, one-half on each other's land, the parties to divide the expense. If only one is to build at the time, he gets a return from the other party of half what it cost him. Under such an agreement each has an easement in the land of the other while the wall stands, and this accomplishes the title in sales and descent. But if the wall is destroyed or decayed by accident, the easement is gone, unless such contingency is provided for by a deed.

Repairs to party walls are to be borne equally; but if one has occasion to strengthen or improve them for a more extensive building than at first contemplated, he cannot compel the other to divide the expense with him. In some states there are statutes regulating the rights in party walls, and one may undoubtedly acquire rights, by prescription, on a wall built by another, which he has long been allowed to use for the support of his own structure.—*Building News.*

ELECTRICITY FOR HEATING.

THE inventor who succeeds in making a practical application of electric heating, says *Modern Light and Heat*, will not be at a loss to find abundant employment for his device. Although nearly all the inventors along this line have sought to make an electric heater which would primarily be suitable for the heating of railway cars, there is no reason why a successful heater of this kind should not have a much wider application, and come into general use. When the time comes—and it surely is coming—when electric heat can be developed for heating buildings at a cost comparable with other methods of heating now employed, the commercial distribution of electric heat will become an industry second only to that of electric light and power. When our offices, parlors and drawing rooms can be warmed with no other effort on our part than the turning of a switch, when our meals may be prepared on an electric cooking "stove" we shall have reached a point of maximum utility, convenience and cleanliness in heating as we already have in our arrangements for lighting. The abolition from dwelling houses of the ordinary bulky

CANADIAN ARCHITECT AND BUILDER

FINE AND INDUSTRIAL ARTS · DECORATION · FURNISHING
CONSTRUCTION · SANITATION · ENGINEERING

SUPPLEMENT.

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"CANADIAN ARCHITECT AND BUILDER" SERIES OF PRIZE COMPETITIONS.

THE following is a list of competitions in Architectural subjects which we have decided to hold during the winter:—

1st.—Plans of a serving pantry, 100 square feet in size, showing cupboards, shelving, etc., with details of same. Plans to be sent in on or before 1st February next. First prize $5; second, one year's subscription to CANADIAN ARCHITECT AND BUILDER.

2nd.—Essay on Plumbing. Essays to be sent in on or before 1st Jan, 1890. First prize, $10; second, one year's subscription C. A. & B.

3rd.—Design with details of an outside porch, etc. Designs to be in on or before 1st Jan. 1890. First prize, $5; second, one year's subscription C. A. & B.

4th.—Design with details for front and vestibule doors, with plan of vestibule. Designs to be sent in on or before 1st Feb., 1890. First prize, $5; second, one year's subscription C. A. & B.

5th.—Details of the interior of a small house to include those for staircase, doors, architrave, base and windows. Designs to be sent in on or before 1st March, 1890. First prize, $10; second, one year's subscription to C. A. & B.

6th.—Design with details for four mantels, two of wood, one of brick and one of stone. Designs to be sent in on or before 1st of April, 1890. First prize, $5; second, one year's subscription to C. A. & B.

7th.—Three designs with details, for front fence. Designs to be sent in on or before 1st May, 1890. First prize, $5; second, one year's subscription to C. A. & B.

8th.—Essay on Heating and Ventilation. Essays to be sent in on or before 1st May, 1890. First prize, $10; second, one year's subscription to C. A. & B.

9th.—Design with details for a bath room. The drawings required will be a plan with such sections as may be required to fully show the work. Plans to be sent in on or before Jan 1st, 1890. First prize, $5; second, one year's subscription C. A. & B.

The Architectural Guild of Toronto have very kindly appointed a committee from their number to judge the above competitions. We shall publish each report as sent to us by the committee. Draughtsmanship, neatness and clearness of arrangement of drawings will be taken into consideration in awarding positions.

Drawings must be made on sheets of heavy white paper or bristol board, 14 x 20 inches in size, and must be drawn to allow of their being reduced to one-half the above size. Drawings must be made in *firm strong lines*, with pen and *black* ink. No color or brush work will be allowed.

Each drawing must be marked with the *nom de plume* of its author, and the author's name, *nom de plume* and full address, enclosed in sealed envelope, must accompany each drawing sent in.

We reserve the right to publish any design sent in.

Drawings will be returned to their authors within a reasonable time after the committee has given its decision.

If the correspondent who sends us a letter for publication, signed "Draughtsman," will comply with the rule in such cases by sending us his name and address as a guarantee of his *bona fides*, we shall be pleased to insert his letter.

The Architectural Guild of Toronto has determined to give two prizes for competition during the present winter, open to students and draughtsmen. One prize will be for the best essay on the History of Architecture; the other for the best design for a small church to seat 150 persons in the late decorated period of architecture. Particulars will be given in our next issue.

OTTAWA.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

VERY little of importance to builders and architects has taken place here since my last communication, and it is generally expected that the approaching winter will be the dullest experienced for some years. A large number of dwellings and stores have been erected, but in most cases of an ordinary character, the majority of them not requiring the services of an architect, or rather the owners seem to think so.

Architects Arnoldi & Calderon have under erection an addition to the county jail, costing $10,000, and have just completed a handsome block of stores for Sheriff Streetland.

Architect F. Alexander has under construction two residences for Mr. C. Ross, costing each $6,000; a residence for Mrs. Denis, costing $5,500; and a residence for Dr. Stackhouse, costing $5,000

Architect Bowes has under construction a fire hall for Dalhousie ward, costing $5,000; residence for Mr. R. O. Smith, $6,000; hotel for Mr. B. Mellon, $7,000; block of offices on Wellington St., costing $10,000; residence for S. Daniels, costing $4,000; ward school, costing $3,500.

A meeting of the Architects' Association was held recently, and a committee appointed to confer with a committee of the Contractors' Union, with the object of drawing up a building contract, but the joint committee has not yet met.

The Department of Public Works has had plans prepared by the Department for an extensive addition to the Supreme Court, an appropriation for which will be placed in the estimates next session.

The Plumbers' By-law, which has been before the city council for some months, has dropped through, the committee reporting that they were unable to draft a by-law acceptable to the master plumbers.

The by-law governing the erection of buildings in the city, and appointing a building inspector, the draft of which cost the city $300, has also dropped through, as the city council thought the draft was too stringent, and would interfere with the building of a poor class of houses, thus defeating the object of the framers of the by-law. Therefore, no record is kept of the buildings in course of erection, which makes it almost impossible to give a report of what is being done

REPORTS ON COMPETITIONS.

COMPETITION FOR SERVICE PANTRY.

The Committee report on the merits of this competition as follows: "It is certainly a matter of regret that so few (there being only two sets of plans) thought it worth while to enter into this competition: for a well arranged and appointed service pantry is a thing of no little importance in a dwelling house of even modest pretensions, while in the more ambitious "mansion" of the wealthy citizen, it is simply indispensable if the dinners are to go off successfully.

Neither of the two competitors seems to have a right idea of the requirements. "Angelo," whose effort is free from the misplaced exuberance of his solitary rival, "X Z," has furnished his pantry with a carving table which, though necessary and convenient for the carving room of a hotel, can hardly be said to be one of the requirements where the head of the house does the carving at the end of his own table, while his wife and friends look on by way of encouragement. "Angelo" establishes communication with the kitchen by means of a "slide" and with the dining room through an archway entering the rear hall. This is a good arrangement if the passage marked "Rear Hall" is really only a servants' hall.

The drawings are fairly well rendered, but the printing is wretched, and at once reveals an unskilled or careless hand.

"X Z" has apparently planned his pantry so as to communicate through doors with both kitchen and dining room, but has not designated the adjoining rooms, and this point is left in some doubt. The doors are, however, too close together, and the shelving and dressers take up too much room. Two servants attempting to work at the same time in the pantry would most certainly either smash each others' heads or a large portion of the china of their unfortunate mistress.

"X Z" has omitted a pantry sink, and this of itself is sufficient to put him out of court. But the worst feature of his work is his attempt to make the pantry a thing of beauty. His details are elaborate without being well designed, whereas they should be plain in character. The drawing is worse, while his printing would, if reproduced, be a disgrace to the pages of the CANADIAN ARCHITECT AND BUILDER.

Altogether we think this competition should be declared "off," and then open again, when it should excite more interest than it seems to have in this instance.

Your obedient servants,

R. J. EDWARDS,
JOHN GEMMELL,
W. A. LANGTON.

Owing to the very unsatisfactory nature of this competition, we shall act

IECES

upon the suggestion of the Committee, by declaring the competition "off," and again call for drawings for service pantry, under the same terms and conditions as before. Drawings must reach this office on or before 1st February. Full particulars are printed elsewhere under the heading "CANADIAN ARCHITECT AND BUILDER Series of Prize Competitions." Competitors will please note carefully the manner in which drawings should be prepared.—EDITOR C. A. & B.]

COMPETITION FOR PLASTER CORNICE AND CENTRE PIECE.

The designs submitted in the CANADIAN ARCHITECT AND BUILDER competition for Plaster Cornice and Centres, we beg to report as standing in the following order of merit:

No. 1, by "Circus," we place first. Although not drawn with the clever sweep of No. 2, there is, however, evidence that author has given most study to contrasted effect of different mouldings and ornament, and the two small centres are quite new treatment of familiar ornament.

No. 2, by "Me," are well designed, well drawn outlines of good style of cornices and turned centres, which of all submitted are perhaps most in accord with present work.

No. 3, by "Put I Kote," are very good examples of a style which imitates wood construction somewhat. The smaller one of both cornices and centres we judge to be the better. The 25" centre, although perhaps more original, requires refinement in parts, and the wall members of 30" cornice are decidedly heavy.

No. 4, by "Casino." Of the cornices on the sheet, the 25 inch girth is the best, and would make an effective cornice, although mouldings of all the cornices are a trifle small and too numerous, and freehand drawing wants cultivation.

No. 5, by "No 3." The plain and moulded surfaces of cornices are fairly disposed. Of the centres, the pilaster one is the best. But these drawings suffer much from drawing of ornament, which is too natural and rudimentary.

No. 6, by "Ogee," is hardly up to class of preceding, and will doubtless improve with more experience.

Your obedient servants,
R. J. EDWARDS.
JOHN GEMMELL.
W. A. LANGTON.

The names of the competitors in this interesting competition, are in their order of merit, as follows:

No. 1. "Circus," Thomas R. Johnson, 74 Baldwin St. Toronto.
No. 2, "Me," C. H. Acton Bond, Toronto.
No. 3, "Put-I-Kote," William Fingland, 159 Markland St. Hamilton.
No. 4, "Casino," Geo. J. Schell, 116 Church St., Toronto.
No. 5, "No. 3," James Walker, 5 Ann St., Toronto.
No. 6, "Ogee," S. E. Wells, 43 Yorkville Ave., Toronto.

THE CONFEDERATION LIFE ASSOCIATION BUILDING COMPETITION.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—I have just returned from an inspection of the competitive designs for the Confederation Life Association building, now on view at the Canadian Institute, and the (to me) apparent injustice of the selection of "Lux" prompts me to suggest that the Board of Directors of the Association should be asked to consider how far they have fulfilled their promises to the competitors, as set forth in the "Instructions to Architects."

To the fact that the names of the gentlemen forming this Board are above the suspicion of unfairness, the success of the Board in obtaining designs from nearly all the leading men in the province is undoubtedly due; and I cannot think that these gentlemen will allow the stigma of such a decision to rest upon their shoulders, when the facts of the case are made clear to them.

In the conditions of the competition the Board promises the competitor that it will, with the aid of *an unbiased professional adviser*, select the *best* four designs for the respective prizes; and yet this "unbiased" professional adviser candidly admits that he has not "entertained" several designs submitted (and among them those which, in the opinion of most of the architects attending the convention, were most deserving) because, forsooth, he chose to take the third paragraph of the "conditions" as meaning something altogether different from what it appears to an ordinary English reader to mean.

This paragraph reads "The following drawings will" (mark, "will," not "must,") be furnished by each competitor, and these only will be received and considered, but minor variations of detail or *alternative arrangements* may be shown on any of the drawings by means of flaps; Plans of the different storys and the basement; Elevations; Perspective."

Now three of the best designs submitted, "Interest," "A Good Investment" and "1890," are disqualified by the expert under this clause. "Interest" does not submit all the drawings named above, but he does submit a sufficient number of them to make his intentions perfectly clear to any properly qualified expert who chose to take the trouble to study the drawings sent, while "1890" only appears to be guilty of the crime of neglecting to show a Yonge st. elevation and to attach he drawings intended as alternative arrangements to the sheets they are intended to be alternative to. The treatment accorded "A Good Investment" is even more outrageous. The author submits plans of the different storeys and basement, all three elevations, two sections through main office and one section through front half of building for heights, etc., and a perspective, together with additional sheets or flaps, showing an alternative treatment of the elevations and of the main and office floors. It is true that some portions of the perspective were not inked in, and that sheets showing alternative arrangements of plans or elevations were not attached to the main drawings, but the former is nevertheless clearly a perspective within the meaning of paragraph 6, which reads:—"The perspective will be drawn in *line only* without shading and without any accessories, such as sky, trees, figures, etc.," and the latter are practically unattached flaps, i. e., any one of them, if laid over the drawing or part it is intended as an alternative to, would properly fill the place. The "unbiased" professional expert, however, disqualifies this design because it is not sent in as required by the "Instructions," and selects a design which, among other faults, is able to boast of an arrangement which separates the type-writers, Secretary, supply room, storage, vault, lunch room, lavatory, etc., from other parts of the main office by the public space, and the Secretary from the Managing Director by a narrow passage 25 or 30 feet long, so that if the Managing Director wants a typ-ewriter, the young lady must tramp 25 or 30 feet along the public passage among the customers, agents, etc., then pass through the Secretary's room and along another 25 feet passage to his room; or if a clerk in the main office wants to wash his hands or to get a sheet of paper from the supply room, he must go outside the office and 70 or 80 feet along the public corridor among the customers to accomplish his purpose. Then the main vault is 8 x 21 with a door in the *side*, although the instructions distinctly call for a vault 10 x 18 with a door in the *end*.

Now, if Mr. Hopkins had taken the trouble to qualify himself to some extent for the position of an expert in this competition by enquiring into the way in which the work in such an office is carried on, he would have found that these peculiarities of arrangement are serious defects. If he did not know this, he should not have accepted the position of expert, and if he did know it, he should not have given the decision he did. The competitors have at least the right to expect consistency, and when an expert presumes to disqualify certain designs on account of alleged non-compliance with the conditions, he should be sure that the designs he selects for recommendation comply with those conditions.

The expert's criticism upon the elevational treatment would be laughable were it not for the serious interests involved. The fortunate "Lux" is described as a "building of a very pleasing and distinctive character, showing at a glance the purposes for which it is intended, namely a public institution and at the same time a commercial building," whatever that may mean, while "Paid up Policy," one of the most carefully studied elevations submitted, is passed over with the clause, "plain in character," the "plain" being evidently intended to be understood to mean "common place," and "Interest," another splendid elevation, is not even deemed worthy of mention.

That "a public institution" and at the same time a "commercial building" should have the central tower, the main feature of the principal elevation, emphasizing the entrance to a dry goods lane (as is the case in "Lux") may seem to Mr. Hopkins appropriate, as indicating the dual "purposes" of the building, but to my mind it savors of bad design.

Faithfully yours,
ONE OF THE REJECTED ONES.

Toronto, Dec. 1st, 1889.

CONTRACTS OPEN.

TRENTON, ONT.—Messrs. Potter & Ayers will erect buildings for manufacturing purposes.

ORILLIA, ONT.—By vote of the citizens a lot has been selected as the site for a new post office.

WHITBY, ONT.—A joint system of water supply for this town and the town of Oshawa, is talked of.

KINGSTON, ONT.—The Governors of the Kingston general hospital have decided to build a new wing to cost $10,000.

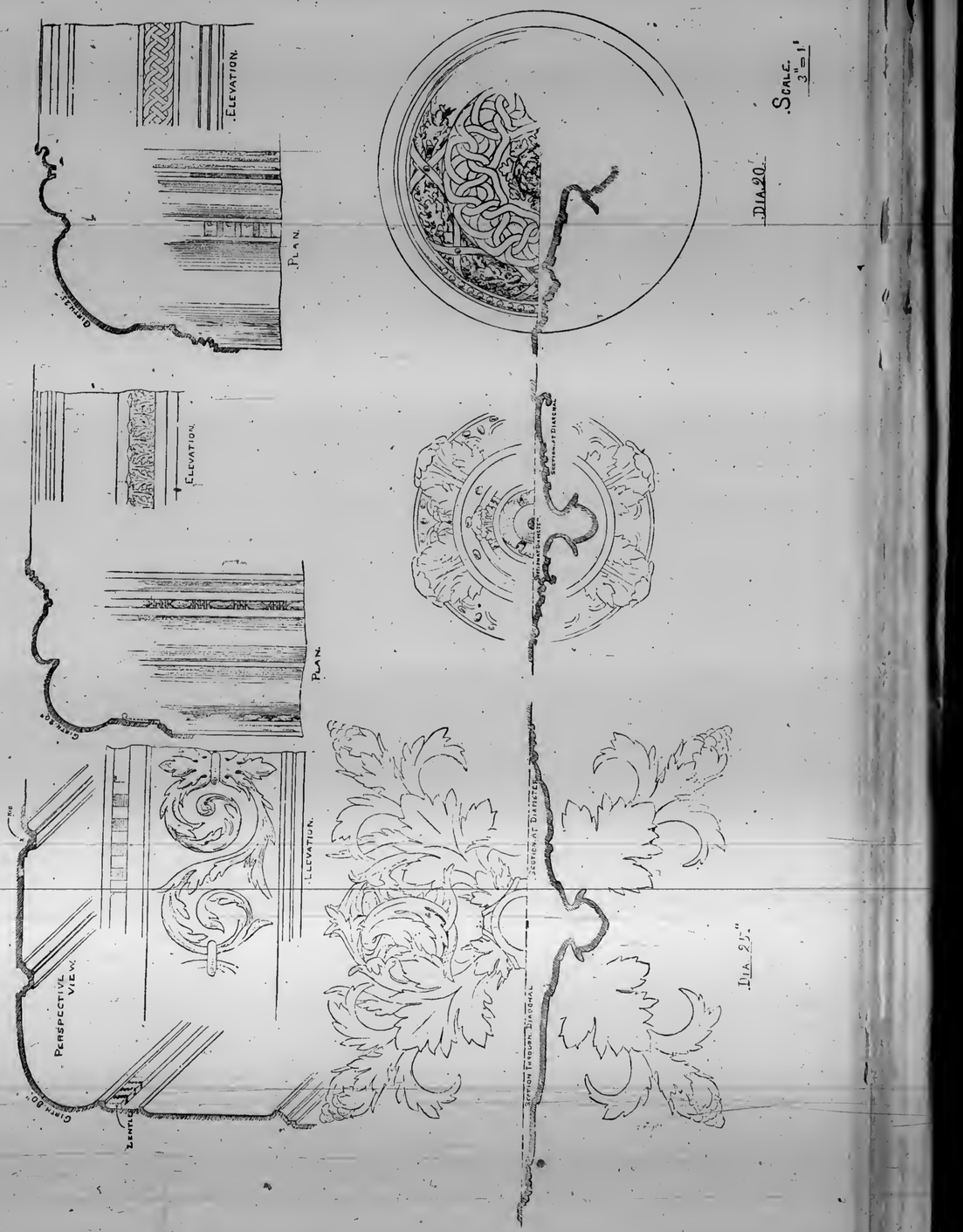
NIAGARA, ONT.—Voting on the by-law to raise $30,000 for water works here resulted in 82 votes for the by-law and 29 against.

WEST TORONTO JUNCTION.—The Disciples have recently purchased a plot of land on Keele street with a view to the erection of a church.

WOODSTOCK, ONT.—A committee of the county council of Oxford has reported in favor of the erection of a poor house. Action on the report has been deferred until January.

MONTREAL, Que.—A syndicate is negotiating for the purchase of the Montreal Warehousing Co.'s large warehouses on Wellington St. It is intended, so soon as the property changes hands, to considerably enlarge and improve the buildings.—It is proposed to erect a gallery in St. Paul's church.

TORONTO, ONT.—The Board of Works will shortly advertise for tenders for laying a lot of cedar roadways, with the intention that the work shall not be started until early spring, but that the material shall be got ready during the winter.—The following building permits have been issued from the office of the City Commissioner since 1st December: Geo. Eldridge, pr. 2 storey det., bk. dwellings, 580 Manning Ave., cost $2,000; T. R. La Belle, pr. s. d. 2 storey and attic bk. dwellings, Euclid Ave., north of Ulster St., cost $5,000; J. Capell, 2 storey and attic bk. dwellings, 351 Ontario, cost $2,000; J.A. Simmers, bk. add. to 149 King St. east., cost $1,600; J. Gordon Jones, bk. warehouse, rear 70 King St. west, cost $6,000; B. Langley, 2 storey and attic bk. dwelling, Bernard Ave., cost $6,000; Jno. Shannessy, three 3 storey bk. stores, McCaul St., opposite Caer Howell, cost $5,000; T. E. Stephenson, alterations to two houses, Maitland Pl., cost $5,000; S. Tulloch, pr. s. d. 2 storey and attic bk. dwellings, Cowan Ave., cost $3,600; L. C. Sheppard, three pr. att. 3 storey bk. dwellings, Park Road, cost $9,000; Jas. Tulloch, 2 storey bk. dwelling, 169 Cowan Ave., cost $1,800; L. C. Sheppard, seven 2 storey att. bk. dwellings, Reynold St., cost $5,600; T. J. Dudley, two pr. 2 storey and attic bk. fronted dwellings, 199 to 205 Seaton St., cost $3,600; Fred. Phillips, pr. 2 story and attic bk. dwellings, Maitland St., near Yonge, cost $6,000.



"CANADIAN ARCHITECT AND BUILDER" COMPETITION FOR PLASTER CORNICES AND CENTRE PIECES

PREMIATED DESIGN BY "CIRCUS," (THOS. R. JOHNSTON), TORONTO.

CANADIAN ARCHITECT AND BUILDER

VOL. III—1890.

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CANADIAN ARCHITECT AND BUILDER

FINE AND INDUSTRIAL ARTS · DECORATION · FURNISHING
CONSTRUCTION · SANITATION · ENGINEERING

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—THE—

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The CANADIAN ARCHITECT AND BUILDER will be mailed to any address in Canada or the United States for $2.00 per year. The price to subscribers in foreign countries, is $2.50. Subscriptions are payable in advance. The paper will be discontinued at expiration of term paid for, if so stipulated by the subscriber; but where no such understanding exists, it will be continued until instructions to discontinue are received and all arrearages are paid.

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ADVERTISEMENTS.

Prices for advertising sent promptly on application. Orders for advertising should reach the office of publication not later than the 12th day of the month, and changes of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The Ontario Association of Architects has appointed the "Canadian Architect and Builder" its official paper.

VOLUME III.

THE CANADIAN ARCHITECT AND BUILDER enters with the present number upon the third year of its existence. A comparison of this number with the initial issue of two years ago, demonstrates the fact that a considerable measure of progress has been made. The past year was very satisfactory in its results, the number of subscribers having doubled, and the advertising patronage having largely increased also. There is every reason to hope that the progress which has marked the past, will be maintained throughout the present and future volumes. The publication of a weekly intermediate edition (the CANADIAN CONTRACT RECORD) devoted to the object of supplying contractors and supplymen with advance information regarding contracts open to tender, will be commenced shortly. No effort will be spared to make this intermediate edition of great value to subscribers. We desire to enlist the interest and help of every reader, and especially of every architect, for the attainment of this object. We tender our acknowledgements to all who have assisted us in any way in the past, and trust that their number will be largely augmented in the future. We solicit for the firms who advertise in these pages, the patronage of our readers. So far as we know, they are among the most progressive and reliable men in their respective lines of business. Their advertisements constitute a directory of almost everything required in the erection and equipment of buildings of whatever character. Nowhere else can the architect and contractor find such a ready reference. We trust that they will make good use of it, and not forget, as too frequently happens, to mention in their correspondence with advertisers, the source of their information.

A PROJECT is on foot in London, England, for the erection of a tower which is to reach, if not to heaven, at least a long distance skywards. The originator of the undertaking is Mr. Edward Watkin, and the proposed site of the structure, the banks of the Thames. A London despatch dated the 2nd inst., says: Two hundred and forty-eight architects and engineers, sixteen of whom are Americans and Canadians and sixteen Frenchmen and Germans, are designing plans for the tower. Many novelties are produced in the designs.

THE City of Montreal has decided to expend large sums of money during the present year on pavements which are intended to be of a permanent character. It is pleasing to notice the determination evinced to have better roadways, yet in our judgment the question of what shall be done with electric wires should first be settled. If they are to go underground, some permanent scheme for their accommodation and proper maintenance should be devised and acted upon at once. If this course be not taken, we shall no doubt find that the costly pavements which it is proposed to put down, will fail to be permanent, but will be destroyed by being constantly torn up to enable repairs to be made to the underground conductors.

WE extend a very hearty welcome to the new edition of our elder cousin, the *American Architect and Building News*, and at the same time we must pay a tribute to the enterprising spirit of its promoters. The "International Edition" aims at the reproduction of a great many valuable drawings and the illustration of buildings ancient and modern, that will prove very serviceable to the readers, at an outlay of a very large sum of money, which necessarily makes it a somewhat expensive journal. All professional journals are published for the benefit of the profession they represent. They require the support of that profession, and in order to be a success, must receive it; it is therefore to the interest of every man to do his utmost for the journal devoted to the interests of his business, whether that business is professional, merchantile or mechanical.

IT is so seldom that buildings in Canada are subjected to high wind pressure, that it is to be feared sufficient care is not always taken in their construction to insure safe resistance to such pressure. The unusually heavy winds prevailing during the last few weeks, have caused the partial collapse of several structures in this city. In one instance a brick gable of a new church crashed through the roof of an adjoining dwelling, in another about eighty feet of galvanized iron work stretched across the front of a block of stores with a view to their adornment, fell in a mass to the ground on one of the principal thoroughfares. Fortunately the accident happened early in the

morning when few persons were on the streets. Had it occurred a few hours later, there can be little doubt serious injury, if not loss of life, would have resulted. Considering the large amount of galvanized iron now used on buildings, largely in the way of ornament, the building inspector should see that it is substantially put up, and that pedestrians are in no danger of having it carried down upon them by a sudden gust of wind.

WE have received a letter signed "Draughtsman," complaining that many architects do not pay their assistants promptly. The letter is somewhat lengthy, and we cannot see that its publication would benefit anyone. Draughtsmen are not obliged to give their services to an architect who is not able and willing to pay a fair equivalent for them, and pay promptly.

THE success attending the Ontario Association of Architects has led some Montreal architects to advocate the establishment of a similar organization for the Province of Quebec. The laws relating to architects, builders and proprietors in that province are said not to be satisfactory or specific, while the necessity for the elevation of the profession is generally recognized. There is but one obstacle of any importance which is likely to stand in the way of the successful formation of such an Association as now exists in Ontario. That obstacle is professional jealousy. If our eastern friends can get this out of the way, we doubt very much whether anything else will rise up to hinder the object. The want of fraternity among the architects of the Province of Quebec can hardly be greater than existed in Ontario prior to the birth of the O. A. A. Associations of this kind promote acquaintanceship among members of the profession, and in many cases tend to remove hastily-formed unfavorable impressions of the character of a brother architect. It would give us very great pleasure indeed to see an earnest attempt made for the organization of an Architectural Association for the Province of Quebec.

THE Committee recently sent from Toronto to visit the technical schools of the United States for the purpose of acquiring information which should prove valuable in the establishing of such schools in the City of Toronto, have presented their report. From what they have observed of the methods of conducting such schools in the United States, they are convinced that it would be unwise to vest the management in the Toronto Free Library Board, as has been proposed. The language of the report on this point is as follows: "We think that the Board of Management of these schools should be a distinct and separate body from the Free Library Board, and so constituted as to be a representative board of citizens, who from their education, tastes, or other special qualifications would be more likely to make the enterprise a success." Notwithstanding that fault has been found with the Committee for the above recommendation, we believe it to be a wise one. The Free Library Board has quite enough to occupy its attention in properly discharging the duties for which it was appointed. Technical schools, to be successful, should be directed by persons familiar with, and specially interested in, the branches of special knowledge proposed to be imparted. To place the management in the hands of any other class of men would in all probability result in the adoption of a blundering policy, and the exhausting of the funds provided by the city without anything useful being accomplished.

AS may be seen by our advertising columns, the City of Quebec proposes to build a City Hall, and to that end has asked for competitive designs. The conditions plainly show that a good design is not required for the City Hall of Quebec. If the obtaining of a good design was really the object of the competition, the conditions would be very different. It should not be necessary for us to point out that architects worthy of the name will not send in designs to become the property of any building committee on the payment of a premium, or a paltry $100.00. It is perfectly true that there are men who call themselves architects who will send in designs, but their designs are generally such that it would be much less expensive and better policy to have nothing whatever to do with them or their authors. A very objectionable feature of the conditions is that wherein the city reserves the right to withhold from the winner of the competition the superintendence of the work. It would likewise have tended very much to the success of the competition if the selection of the experts to judge the plans had been made, and their names published in the advertisement. Before deciding to engage in a competition involving so much labor and expense, architects would like to be in a position to judge of the capabilities of those who are to sit in judgment on their work. If the city of Quebec desires to enlist the best efforts of the ablest architects in this competition, it will be necessary to amend the conditions.

A CORRESPONDENT, whose letter we published in our November issue, on the subject of "The ability of architects to estimate" made statements which are not warranted by facts, excepting in the proceedings of men not properly qualified to practice as architects. We published the letter, because we do not vouch for the opinions expressed by our correspondents but leave it to our readers to correct misstatements, if they consider it necessary. Every properly qualified architect is thoroughly able to estimate approximately the cost of his design, but it is not every client who is satisfied, and instead, he prefers to try whether he cannot get a price "by tendering," that will include a good deal more work than his architect tells him can be done for the money. Our reason for alluding to this letter is the statement concerning the custom in England, which is misleading. Builders do not there "engage the services of a professional building surveyor to take out quantities," nor does the architect charge builders for copies of the lithographed bill of quantities, to cover the expenses. It remains with the client to agree to the preparation of a bill of quantities, and he pays the cost of the lithographing or printing as well as the architect's or surveyor's fee for its preparation. Quantity surveying has become a separate profession in England within the last few years. But even this arrangement does not better the style of tenders, and reference to the English journals shows how erratic are contractors in the matter of valueing labor and material. The question is not the ability of architects so much as the want of system of pricing among builders. We are always glad to hear our subscribers' views on current topics, even though we may not be able to coincide with them.

BADLY constructed scaffolds continue to be erected, and workmen continue to risk their lives upon them. A scaffold of this character gave way in Toronto a few days ago, while three men were working upon it. Two of them fell a distance of twenty-five feet and received serious, and perhaps fatal injuries. The other grasped a window sill and saved himself. The City Council has appointed a Committee to consider means to prevent the erection of insecure scaffolds. The Committee has held several meetings, and has discussed the matter with representatives of the workmen and the Contractors' Association. The workmen ask for the appointment of an inspector to examine every scaffold erected. The contractors are opposed to this course, but the Committee seems disposed to act upon the suggestion. The number of accidents by falling scaffolds last year, and the serious character of the results, makes it desirable that precautions should be taken to lessen the danger from this cause. We desire to reiterate our opinion, however, that unless the Council are prepared to appoint at least half-a-dozen inspectors, and furnish each with a horse and rig, a system of inspection which will be in anywise efficient cannot be carried out. The remedy for the present state of things is in the hands of the workmen themselves. They should be as competent as any inspector to decide whether or not the scaffolds they are called to work upon have been properly constructed. Let them refuse to work upon insecure scaffolds, and give the contractors to understand that actions for damages will follow every accident caused by scaffolds falling. The appointment of scaffold inspectors should relieve contractors from the responsibility which they are at present under when an accident occurs. The question presents itself: who will assume this responsibility? Is the city prepared to be responsible for accidents which may occur in connection with scaffolds which shall have passed examination at the hands of the inspector? If so, to avoid the possibility of having to pay heavy damages the city must make the inspection thorough, and to do this will cost a larger amount of money probably than the citizens will consent to pay for the service.

OUR subscribers who may have chanced to see a copy of the Toronto *Mail* of January 1st of this year, were undoubtedly very much astonished at the sixth page, devoted almost entirely to cards of Toronto architects—cards occupying a space of at least twenty lines, with the names of the firms in extravagantly large type. Anything more unprofessional could hardly have been desired, and it was difficult to understand how it was that the names of a majority of the members of the Toronto Architectural Guild thus appeared, when it is well known that this professional body sets its face against advertising, and especially against that form of advertising known as "puffing." We are glad then, to find that neither the Guild nor the *Mail* are entirely responsible for it, that, in fact, it was the result of a misunderstanding between the architects and the newspaper canvassers. They then went round among the architects and endeavored to persuade them to give them their cards for publication, at a cost of $10, in a "holiday number" of the *Mail*, with a "special circulation." They met with rebuffs from all architects who know the true character of their profession, and seeing that they were likely to lose commissions as far as architects were concerned, they invented a story that they had laid their scheme before the Secretary of the Ontario Association of Architects and "it was with his approval that they ventured again to call." Without going further into the matter, some few men then gave up their cards and signed a form agreeing to pay the fee. In the meantime, the Secretary of the Guild had prepared a paper, signed by many members, in which they agreed that they would pay the fees on condition that nothing more should appear than a simple card, without any "puffing," on the further condition that an article on city architecture written by one of themselves should also be published. The canvassers were made to sign another agreement to the effect that if there was any "puffing," or if an architect's name appeared in connection with any building he had carried out, he (the canvasser) should not collect his fee. It is needless to say how entirely he broke his agreement. There was no "holiday number" with "special circulation"; the article on city buildings was compressed in the smallest type; names of architects appear in connection with their buildings; some of the cards occupy no less than forty line spaces, and are decidedly "puffing," and therefore the canvassers will find difficulty in collecting their fees from the thoroughly disgusted gentlemen who have been so provokingly taken in. When will the proprietors of legitimate business enterprises learn to confine their advertising to legitimate publications and refuse absolutely to have any dealings with "fakirs"? Experience proclaims this to be the only wise course to pursue.

OUR ILLUSTRATIONS.

POLICE BUILDINGS, TORONTO—A. R. DENISON, ARCHITECT, TORONTO.

THE sketch published is the Ossington avenue elevation of a new station about to be erected at the corner of the Avenue and Bloor street. The cost, exclusive of land, will be about $15,000. The main building will contain large public and small private offices, guard room, accommodation for 40 men, dormitories for waifs and strays, confiscated liquor, &c., gymnasium and sleeping apartments. The ground floor will be finished in stucco, with glazed brick dado, tesselated glass, and hardwood trimmings. The lavatory will be very complete, and finished in slate. The prison, and offices and stable of electric patrol system will be in rear of main building. The prison is connected by covered way, enclosed in wrought iron bars. The cells are to be made entirely of perforated boiler plate, fitted in wrought iron doors, and set upon cement floors, with passage entirely round same. These buildings are to be heated by indirect steam process. The elevations to be finished in dark clinker brick, grey random rubble, and faced with Portage Entry stone. Roof will be black slate, relieved with terra cotta ridge tiles.

PHOTOGRAVURE PLATE—INTERIOR OF ST. PAUL'S R. C. CHURCH, TORONTO—JOS. CONNOLLY, R. C. A., ARCHITECT, TORONTO.

COMPETITIVE DESIGN FOR BATH-ROOM, BY "BIRDS-EYE," (E. G. BIRD), TORONTO.

COMPETITIVE DESIGN FOR FRONT PORCH, BY "MI YODEA," (ERNEST WILBY,) TORONTO.

ARCHITECTURAL DRAUGHTSMEN.

TORONTO, Jan., 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

SIR,—In the November number of the CANADIAN ARCHITECT AND BUILDER, you made some remarks on tho lack of good architectural draughtsmen in Canada, and the little interest shown by them in the profession. Now I think the chief cause of this is insufficient remuneration. If the Canadian architects were to pay their assistants at the same rates as those in the States and elsewhere, I think the standard would soon be raised, for this reason: Draughtsmen, if they take any interest in the profession at all, necessarily require more pay than will barely keep them, for not only must they get together the nucleus of an expensive library, but also save sufficient money to enable them to do a little travelling before becoming architects, besides many other things not required by ordinary clerks. To obtain the necessary funds at present, draughtsmen get as many jobs as possible to do out of office hours, and this time, which should be spent in perfecting themselves in the profession, is utilized for money-making. Last year this was why a number of them were unable to attend the meetings of the Draughtsmen's Association. No doubt this caused its failure as much as anything, and three years ago when the Association was first organized, a large number of those applied to to attend the first meeting were doubtful as to whether they would have time to go in for it on this account. Probably the architects will take this little matter into consideration whilst the professional improvement spirit is with them.

Yours truly,

DRAUGHTSMAN.

OPINIONS WANTED.

WINNIPEG, MAN., Dec. 23rd, 1889.

Editor CANADIAN ARCHITECT AND BUILDER.

SIR,—I shall be glad if you will give your views in the next issue of your valuable paper as to the better construction for a fire-proof vault—two 8 inch walls with 2 inch air space between, or 12 inch wall outside and 2 inch air space with 4 inch wall inside, bonded say every 5 feet super. to outside wall.

Yours faithfully,

ARTHUR T. TIMEWELL.

[We should be inclined to favor an 8-inch wall, but would like to hear the opinions of some of our readers on the subject.—ED. C. A. & B.]

PERSONALS.

It is reported that a Mr. Lloyd, architect, of Detroit, Mich., will remove to London, Ont., and assume the business of the late Geo. F. Durand.

Mr. M. J. Hynes, Managing Director of the Hynes Terra Cotta and Brick Co., Toronto, was waited on by his staff of employees on Christmas Eve, and presented with a gold-headed cane, as a mark of their appreciation. Mr. Hynes cordially reciprocated the kindly sentiments expressed towards him.

One of the most prominent men in the ranks of Canadian Civil Engineers has passed away in the person of Mr. Samuel Keefer, who died at his home in Brockville on the 7th inst. He has been identified with the construction of many of the leading public works of the country. One of the triumphs of his skill was the construction of the Suspension bridge at Niagara Falls in 1869. He was also architect for the old suspension bridge at the Chaudiere, and was connected with the Grand Trunk railway from 1851 to 1854. During his lifetime he filled many very responsible Government positions, among them Government inspector of railways and deputy commissioner of public works. In this latter capacity, during the absence of the chief commissioner, he was charged with the selection of plans for the Parliament buildings at Ottawa, and his report was adopted,

DEATH OF MR. GEO. F. DURAND.

IT is a very painful duty which we are called upon to perform in recording the death of the respected Vice-President of the Ontario Association of Architects, Mr. Geo. F. Durand, of London. Mr. Durand had been for a year or more in declining health, induced it is believed by overwork. A vacation which he took last summer made a temporary improvement in his condition, but the strain involved by his large practice speedily destroyed the benefit received. His deep interest in the Ontario Association of Architects led him to attend the recent Convention in Toronto, and render material assistance towards the promotion of the objects which were there considered. His friends were deeply pained on that occasion to observe the ravages which disease had made on a constitution naturally strong, and the indications pointing to the early close of a talented and useful life. Yet, as they bade him good-bye at the close of the Convention, it was not in the expectation that they were wishing him a last farewell. Such, however, it proved to be. In his death, the architectural profession in Canada has lost one of its ablest members, and the Ontario Association of Architects one of its most valuable promoters.

Through the courtesy of Mr. Thos. Tracey, City Engineer of London, and formerly Mr. Durand's partner, we are able to present our readers with a portrait of the deceased, and a few facts concerning his professional career :

THE LATE GEO. F. DURAND.

He was born at London, Ont., in the year 1850, and first studied his profession in the office of Mr. William Robinson, former City Engineer of London. When a promising young man he went to Albany, N. Y., where he was employed for a number of years as chief assistant under Mr. Thomas Fuller on the famous new capitol, and where he married Miss Parker, the daughter of a prominent builder. When Mr. Fuller, who is now Chief Architect of the Department of Public Works, Ottawa, severed his connection with the Albany work, Mr. Durand also left, and after a year's engagement in Maine, returned to London, where he went into partnership in 1878 with Mr. Thos. Tracey, under the name of Tracey & Durand. This firm was quite successful and dissolved in 1882, when Mr. Tracey was appointed to his present position of City Engineer, and Mr. Durand carried on business for himself, continuing with uninterrupted success until the time of his last illness. Among the important buildings in the city which are monuments of his artistic skill might be mentioned the Masonic Temple, the addition to the Custom House, London Club House, Main Exhibition Building (Queen's Park), Canadian Savings and Loan Company Building, R. C. Separate School, the Infantry Barracks (under the Department of Public Works), the new Colborne Street Church, Simcoe Street School, exterior Talbot Street Baptist Church, etc. Many of the large buildings, churches, etc., throughout Western Ontario were designed by him. In the recent competition for the new Toronto Court House, Mr. Durand's plans received second mention, thus receiving first cash prize. An evidence of the esteem in which he was held is found in the fact of his being employed by the Ontario Legislature to erect the new Upper Canada College, and his superintending the construction of the Goderich and Strathroy post-offices under the Dominion Government.

Mr. Durand was a member of St. Andrew's Church, and a prominent Freemason. His wife and four children deplore his loss.

The funeral obsequies were attended by a very large number of persons, including Mr. Fuller, Chief Architect Public Works, Ottawa. The O. A. A., through their Secretary, Mr. S. H. Townsend, telegraphed the following: "The Directors of the Ontario Association of Architects have learned with deep regret of the death of their confrere, Mr. Geo. F. Durand, and beg to extend their heart-felt sympathy to the members of his bereaved family in their great affliction."

"CANADIAN ARCHITECT AND BUILDER" SERIES OF PRIZE COMPETITIONS.

REPORT ON COMPETITIVE DRAWINGS FOR A BATH ROOM.

THE best drawing is that of "Novus Homo," and the fitting of his bath room is unexceptionable, except in the matter of cost. Marble and tiles are hardly possible in a house of moderate cost, and are certainly not likely to be associated with such contracted space as "Novus Homo" has given. He would have done better to throw the water closet into the bath-room, instead of giving it a separate room. By this means the bathroom would have been made of a more comfortable size, and so far from being out of place in a bath room, the water closet is more convenient there, besides being more private.

"Dado" has a good arrangement, with some defects. The recessed bureau, with a fixed mirror over, and windows above the mirror, would be a great addition to a bathroom, but we hope the drawers under the bureau are only intended for spare towels and other general bathroom supplies, and not to help forward the slovenly use of the bathroom as a common dressing room, which one often sees. A short bath is a great discomfort and unworthy of a place in a good bathroom, besides being a fallacy, if intended, as "Dado" proposes, to save hot water, for it takes as much water to cover comfortably a body crouching in a short bath as it does to cover one lying flat. The principal defects of "Dado's" plan is a point upon which he prides himself in his notes that the pipes of the bathroom and the tank are to be got at from the cupboard of the adjoining bedroom. The tank would be much better exposed in the bathroom and to be got at there, and a bedroom is the last place in which to expose any pipes connected with the sewer. The bathroom and all its connections should be as much isolated from the rest of the house as possible.

The seat in "Bird's Eye's" plan is rather an impertinence. The space would have been better utilized by the closet or to contain the basin. The common character of the details and inferior draughtsmanship militate against the merits of the plan. In other respects, the arrangement is good, and the author may claim the first place in the competition.

W. A. LANGTON.
R. J. EDWARDS.
JOHN GEMMELL.

The names of the competitors to whom the Committee have awarded first and second positions in the above competition are :

"Birds-eye," (Mr. E. C. Bird), 18 Toronto St., Toronto.
"Dado," (A. E. Wells), 43 Yorkville Ave., Toronto.

REPORT ON COMPETITION FOR AN OUTSIDE PORCH.

"Mi Yodea" is the most original and in other respects the best design, while the drawing really outclasses the other competitors. Good taste and quaintness are characteristic of its get up, and one of the best points is the snug way in which it fits the house.

For a conventional swell porch, "Utilissimus" will do, as it is well designed in the conventional swell way, but the drawing is poor indeed. For the benefit of the author we might suggest, that in future he omit all unnecessary elaboration in the matter of carving and decorative printing, until he has so far improved his draughtsmanship that he will not do injustice to his ideas, which in this design are good enough in their way. It is doubtful if this drawing will reproduce well.

"Rex," who has a good proportion and plan, we would place third. The drawing is fair, but the printing is bad.

"Recherche" has done anything but employ research, having put a large size builder's porch of the commonest type of turning and bracketing on a small size house. The printing here too is very poor, while the drawing is only passable.

"Gambetta" has a verandah that is not absolute nonsense, but his porch with the seats carefully projecting into the sun and rain, is laborious wrong-doing.

"New Year" has about the same kind of a design—carpenter-like details in quantity sufficient to spoil any good design, which this one is not.

Your obedient servants,

W. A. LANGTON.
R. J. EDWARDS.
JOHN GEMMELL.

The names of the successful competitors in the above competition are in their order of merit, as follows :

"Mi Yodea," (Ernest Wilby,) 106 Yorkville Ave., Toronto.
"Utilissimus," (Robt. J. McCallum,) 213 McCaul St., Toronto.

NOTE.

Several essays have been received in competition for the CANADIAN ARCHITECT AND BUILDER'S prize for the best essay on "Plumbing." Considerable time is required for the proper consideration of the merits of the work of each competitor, and the judges were unable to announce their decision in time for publication in this number. The result will appear in our issue for February.

SUN LIFE ASSURANCE CO. BUILDING COMPETITION—EXPERTS' REPORT.

TORONTO, Nov. 30th, 1889.

R. MACAULEY, ESQ.,
Managing Director Sun Life Assurance Co., Montreal.

DEAR SIR,—On the 23rd inst. we received from you the fifteen sets of designs sent in competition for the proposed new offices for your Company, and in accordance with your request we have made a careful examination of each design separately. Out of these fifteen designs we have selected four, which in our opinion, for various reasons, have more points in their favour than the others. These four, we think, are entitled to the prizes offered, and in the following order :

1st. "WELL CONSIDERED," (Mr. Robt. Findlay, of Montreal).
2nd. "CROSS IN CIRCLE," (Mr. W. T. Thomas, of Montreal).
3rd. "TUUM EST," (Mr. McLea Walbank, of Montreal).
4th. "SOL," (in black ink) (Messrs. James & James, of Toronto).

The design we place first has a very good plan for the ground floor, but we think that this floor would be better to remain clear of all partitions, and as one large room, so that it could be divided by tenants to suit their own purposes. The first floor plan, containing the General Offices, Manager, Actuary and Secretary's room, is, we consider, laid out with great care and knowledge of the requirements. The partitions dividing the office could perhaps be omitted altogether and wood screens, glazed in the upper panels, substituted where necessary. The author has carefully followed the "Instructions," and placed the Board Room on the first floor, but this space might with advantage be given into the General Office, and the Board Room placed on the floor above. The second floor plan is divided into rooms for agents and other officers of the Company. A small portion not required for such purposes is arranged for renting. This space we think might be better used by here placing the Board Room, and the Company would then have spacious offices occupying the whole of the first and second floors. The other floors are divided into offices of a convenient size for renting purposes. The author has selected a type of Renaissance architecture for his elevations. The selection is good, for, owing to the narrowness of the principal frontage, a bold or heavy style would not be so suitable ; the design is well considered, and has a rich and handsome aspect.

"Cross in Circle." This design shows an arrangement of the first and second floors which requires little improvement. A good feature is the well-hole between these floors. By this the two floors are united, and to the public the size of the Company's premises is better understood. Another good point is the waiting room between the Manager's Room and the Public Hall. The exterior design is not as good as many of the others submitted.

"Tuum Est."—The plans in this design have been very well considered, and have many features in common with the designs placed first and second. The Board Room is placed on the second floor and occupies a position suitable to a room of its importance. The exterior aspect of the design is very imposing, although the three tiers of arches on the ground, first and second floors, is somewhat monotonous.

The design bearing the motto "Sol," in black, is not so well planned as those already described. The entrance hall to the Company's offices is very faulty, and the stair badly arranged. Too much space is given to the public on the first flat, thus reducing the general office more than is necessary. The Clerks' Lunch Room is on the second floor, with window to Notre Dame Street. This is too valuable a space for such a purpose. The exterior is very skillfully designed, and may be considered one of the best designs submitted.

The other eleven designs we will briefly allude to without regard to order :

"Star in Circle" has a very handsome exterior. It is simple, but for architectural design it is not surpassed by any. The entrance hall to the upper flats is well arranged, but otherwise the plans are rather inferior.

"Beata" has sent in a very pleasing and well-proportioned elevation. The first floor plan is not good, because it is necessary for the Actuary and the Secretary to pass through the Manager's Room or across the stair landing before they can reach the General Office ; also too much space is wasted in the General Office.

"Aurora" (red) has a good elevation, but very weak plans.

"Rex."—The arrangement of the second floor is decidedly bad, and valuable space thrown away unnecessarily.

"Aurora" (black).—The principal officers' rooms front on a back street, while the clerks have the advantage of Notre Dame Street corner.

"Sunflower."—Elevations too much broken up and overdone with pilasters, corbels, etc. The first floor plan shows the General Office much too small, also situated fronting Notre Dame St.

"Spot in Circles."—Elevations show much originality and architectural ability. Valuable space of the outside has been given to the staircase, thus detaching the officers' rooms from the General Office, and placing the Medical Examiner's room in the darkest part of the building.

"Sol," (red).—The entrance, vestibule and staircase condemn this plan at once, the elevator having no way of getting to it, excepting over the ends of the bottom steps of the stair. Also the columns may be necessary for the construction, but the arrangement would be decidedly inconvenient.

"Facet et Spera" has the same faults of plan as "Beata," the General Office being too small to be of any use.

"Lang Syne."—Plans of the various floors better than some of the others, but the elevations too severe, and more suitable for a warehouse.

"Techne."—The Lavatory occupies the corner window on the second floor. The General Office has the whole of Notre Dame Street corner, the Manager and other officers being separated and put to the rear. The elevations have originality.

(Signed), KNOX, ELLIOTT & JARVIS.

Mr. Edward Playter, M.D., in an address before the Ottawa Society recently, remarked that the plan of warming now so generally adopted, with a series of hot water or steam pipes in the room, without any special means for changing the air, is to be very greatly deprecated. There should be legislature prohibiting such method of warming, unless special provision for ventilation, aside from ordinary window ventilation, were provided, and in such a way that the use of it could not be avoided. Most people do not understand the necessity for free ventilation, and education in this, as in other matters, is one great want of the day.

TORONTO ARCHITECTURAL SKETCH CLUB.

IN the Canadian Institute, that home of Science and Art, the birthplace of so much educational and literary zeal, was organized on the 20th December, 1889, the Toronto Architectural Sketch Club.

To those to whose efforts its formation is due, and to all interested members of the profession, the present prospect of the Club's permanent success must be most gratifying. In an unusually short space of time, it has got into full running order, the membership list has been rapidly increased, the most widespread interest created, and the most kindly greetings and offers of co-operation received from sister art societies. Besides all this, the Club has been most fortunate in obtaining a club room both comfortable and convenient, in the new building, corner Queen and Victoria streets.

In response to the intimation in the last number of the CANADIAN ARCHITECT AND BUILDER and to the circulars which had been sent out, a thoroughly representative gathering of architects, artists, draughtsmen and others, was present at the organization meeting. Mr. R. J. Hovenden, on request, took the chair, and the business of the evening was commenced by the committee on organization making their report. The meeting then resolved itself into the Club, and interesting addresses were made by Mr. Jones and Mr. Blatchly of the Art Students' League, Mr. Forster of the Ontario Society of Artists, and Mr. Curry of the Architectural Guild, in which they presented the good will of their different organizations to the new Club, and gave it many words of encouragement.

Mr. Jones, on behalf of the League, very kindly placed one of the rooms of that organization at the disposal of the Club, until such time as arrangements for winter quarters could be completed. This offer was gratefully accepted, and a hearty vote of thanks was tendered to the League for its kindness. (As the club has now secured a room of its own, it will no longer be necessary to avail themselves of this kind offer).

The constitution and by-laws, as drafted by the committee, were then considered, and with some minor changes adopted.

The regular nights for meetings it was decided would be on the second and fourth Tuesdays of each month, and it was arranged that one should be for some technical lectures or debate, while the other should be devoted principally to the discussion of the monthly sketch competition. These competitions, of course, will be the most important feature of the Club's work, and as planned, will be most attractive forms of study for the members. The idea suggested is, that the conditions of all the competitions may be as liberal as possible, so that members may respond as time and fancy permits.

The election of officers then took place, and the result of the ballot was as follows:—President, Mr. Charles Lennox; Secretary, Mr. A. H. Gregg; Treasurer, Mr. Ernest Wilby; Directors, Mr. Chas. J. Gibson; Mr. Robt. Dawson; these five form an Executive Committee for the transaction of the business of the Club.

The first meeting for "work" was held at the rooms of the Art League on January 4th. A very interesting paper on "Architectural Design" was read by Mr. C. J. Gibson, and elicited some lively discussion. After this, the members employed themselves in sketching from life.

One of the most pleasing features of the organization is the general enthusiasm of the members. Evidently the Club is the outcome of long cherished hopes, and it certainly meets a long-felt want. In the club room, the members will always have the advantage not only of social intercourse, but also of mutual professional aid.

An interesting and instructive programme for the winter will be provided, a number of papers already being promised by well-known architects.

With the extensive use of tin roofing plates came the practice of some importers of offering cheap and nasty plates, thinly coated and full of concealed defects. Merchant & Co., of Philadelphia, instituted the practice of guaranteeing every box of plates, then stamping the brand and thickness on every sheet, and excluding wasters or defective sheets, and lastly by branding the net weight of the 112 sheets on each box, to satisfy the customer that he obtained full weight and just what he paid for.

"ABILITY OF ARCHITECTS TO ESTIMATE."

WINNIPEG, MAN., Dec. 6th, 1889.

Editor CANADIAN ARCHITECT AND BUILDER.

SIR,—It is so gratifying to find endeavours are being made through the medium of your valuable paper to educate the general public to properly appreciate our profession, that I venture to add my modest endorsement to the able letter by "T Square," on the question of the ability of architects to estimate, and the system of providing contractors with bills of quantities. The *modus operandi* is, that after plans and specifications are prepared, they are handed to a Quantity Surveyor, who measures the amount of labour and material, and classifies under each trade, thereby compiling a complete bill of all the labour and material in the building, and the requisite number of copies are lithographed. One of the items of the aforesaid bill is, "allow for quantities," so that every one tendering includes it in his estimate, and only the successful one has to pay.

Unless the system is properly carried out and understood, proprietors instructing architects are inclined to think that, not only are they bound by the quantities, and should there be any mistake made they have to pay for anything not in the bill, but that the cost of preparing the quantities, and which is added to each tender, increases the cost of the building without any consideration to them. Now, while it is quite true the proprietors are bound by the quantities, the rule cuts both ways, the duty of the surveyor being that upon the completion of the work, he should measure the actual building and adjust the account, adding to, or reducing from, as the case may be, the cost of additions or deductions being calculated upon the same rates as the priced bill upon which the tender is made, and which should be in every case deposited with the architect. I have found in practice that unless alterations in the plans are made, deductions more often occur than additions, and should the contrary be the case, the surveyor sees that only work actually done is paid for, which no honest man would object to. Therefore the proprietor, as much as architect or contractor, is benefited by the valuable services of the quantity surveyor, and should be paid by him.

Although many architects make a practice of taking out quantities for their own protection and guidance in issuing progressive certificates, yet, by doing so, they are performing another professional man's work without being paid for it. A quantity surveyor in England is a distinct profession, and when he and his services are recognized here, we may look for closer tendering, and a more healthy state for both the profession and contractors.

I will close this, I fear, already tedious letter, by calling your attention to the existing law in Manitoba, and for what I know in other parts of Canada, which thoroughly ignores architects. Therefore steps should be taken to place us on a par with other professions. I allude to the statute setting out the fees to be paid to professional witnesses, which will be found to mention doctors, lawyers, engineers and land surveyors only.

Yours faithfully,

ARTHUR T. TIMEWELL.

"CANADIAN ARCHITECT AND BUILDER" SERIES OF PRIZE COMPETITIONS.

THE following is a list of competitions in Architectural subjects which we have decided to hold during the winter.

1st.—Plans of a serving pantry, 100 square feet in size, showing cupboards, shelving, etc., with details of same. Plans to be sent in on or before 1st February next. First prize, $5; second, one year's subscription to CANADIAN ARCHITECT AND BUILDER.

2nd.—Designs with details for front and vestibule doors, with plan of vestibule. Designs to be sent in on or before 1st Feb., 1890. First prize, $5; second, one year's subscription C. A. & B.

3rd.—Details of the interior of a small house to include those for staircase, doors, architrave, base and windows. Designs to be sent in on or before 1st March, 1890. First prize, $10; second, one year's subscription to C. A. & B.

4th.—Design with details for four mantels, two of wood, one of brick and one of stone. Designs to be sent in on or before 1st April, 1890. First prize, $5; second, one year's subscription C. A. & B.

5th.—Three designs with details, for front fence. Designs to be sent in

INTERIOR OF ST. PAUL'S R. C. CHURCH, TORONTO

Jos. Connolly, R.C.A., Architect, Toronto.

PLASTER WORK EXECUTED BY
W. J. HYNES,
TORONTO.

SUPPLEMENT TO
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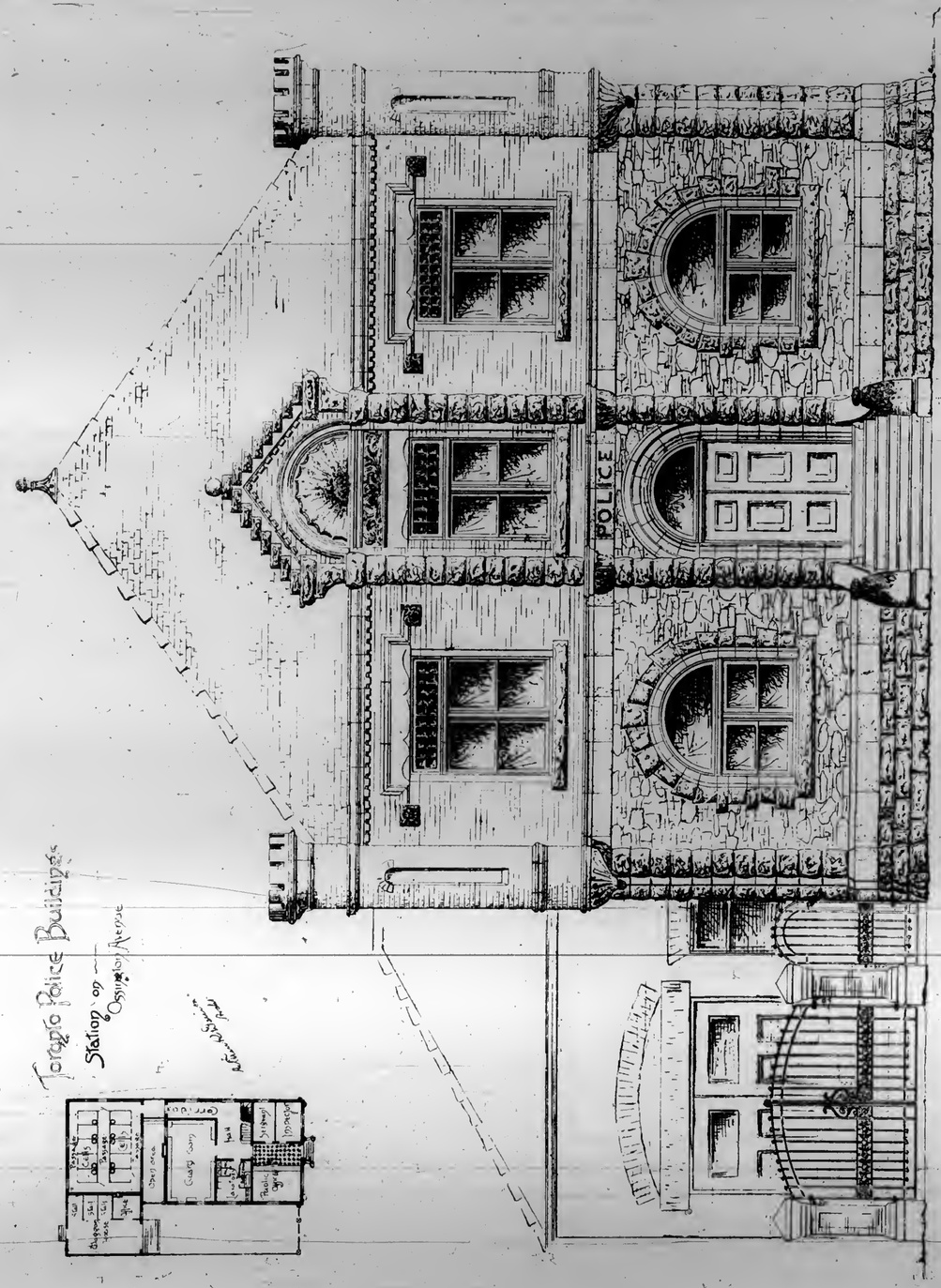


POLICE BUILDINGS, TORONTO.

A. R. Denison, Architect, Toronto.

on or before 1st May, 1890.—First prize, $5; second, one year's subscription C. A. & B.

6th.—Essay on Heating and Ventilation. Essays to be sent in on or before 1st May, 1890. First prize $10; second, one year's subscription to C. A. & B.

The Architectural Guild of Toronto have very kindly appointed a committee from their number to judge the above competitions. We shall publish each report as sent to us by the committee. Draughtsmanship, neatness and clearness of arrangement of drawings will be taken into consideration in awarding positions.

Drawings must be made on sheets of heavy white paper or bristol board, 14 x 20 inches in size, and must be drawn to allow of their being reduced to one-half the above size. Drawings must be made in *firm, strong lines*, with pen and *black* ink. No color or brush work will be allowed.

Each drawing must be marked with the *nom de plume* of its author, and the author's name, *nom de plume* and full address, enclosed in sealed envelope, must accompany each drawing sent in.

We reserve the right to publish any design sent in.

Drawings will be returned to their authors within a reasonable time after the committee has given its decision.

ARCHITECTURAL COMPETITIONS.

THE Architectural Guild, of Toronto, offer the following prizes in competition:

1st.—A prize of $10 for the best essay on the History of Architecture. The essay is not to contain more than 5000 words. Marks will be awarded in proportion of 75% to the subject matter, and 25% to the style of composition. The essay to be sent in not later than April 15th.

2nd.—A prize of $10 for the best design for a country church (suitable for the Episcopal form of worship) to seat 150 persons. The design to be in the late decorated period of architecture. Plans, elevations and sections are to be drawn to a scale of eight feet to an inch. Detail drawings, half inch scale, with full-sized sections of principal mouldings, &c.

Values will be given for correctness of interpretation of the decorated period; for the careful and accurate preparation of the drawings; arrangement of the drawings on the sheets, and for draughtsmanship.

Designs to be sent in on or before March 15th.

Drawings must be made on sheets of heavy white paper or bristol board, 14" x 20" in size, and must be drawn to allow of their being reduced to one-half of the above size.

Drawings must be made in firm, strong lines, with pen and black ink. No colour or brush work will be allowed.

Each drawing must be marked with the *nom de plume* of its author, and the author's *nom de plume* name and full address, enclosed in sealed envelope, must accompany each drawing sent in.

The above competitions are limited to students of not more than four years' standing, who are in the offices of architects who are members of the Ontario Association of Architects, and each competitor must send in a certificate to that effect from the architect in whose office he may be employed.

OFFICE MANAGEMENT AND ROUTINE.*

THE subject chosen for this paper is a remarkably comprehensive one—one of which it is difficult to define the exact limits and difficult to treat generally, for under this head must necessarily be included, not merely all that concerns the interior economy of an architect's office, but a good deal of outside work in connection with it.

As no two men are alike in business capacity, so no two offices are conducted similarly, and one man's practice differs from another's, as much as the style of their various works.

Every man has his own idea of "running" his office, but it does not always follow that his means will allow him to carry out his ideas, and generally it happens that other calls prevent his spending as much money on his office as he would like.

I have not seen yet in this country any architect's office to which the term "luxurious" could be applied, but I have seen a great many which answer to the description "penurious." Now, as a matter of fact, the one extreme is as bad, as unprofessional as the other. A certain amount of "style" is as necessary as "luxury" is unnecessary. By the word "style" I do not mean so much the actual outlay on fittings and so forth, as good arrangement, general neatness and perfect order. Simplicity is an advantage; it is business like. Plenty of room is essential and greatly facilitates business. There is nothing so hindering as interruption. Want of sufficient space usually entails a great deal of it. If you are cramped you cannot have all your drawings satisfactorily arranged before you; you have to turn over sheet after sheet to get at the one you want to work on, and if when moving about your office, your clerks have to make way for you to pass,—or run the risk of having their elbows jogged, considerable inconvenience is felt. Then again, you do not wish to have your clients, clerks and contractors mixed up together in a bunch, and you are much hampered if you yourself have to be mixed up too. And yet this is not uncommon. In cities where rents are high, spacious offices are difficult to obtain within one's means, though in country places and small towns, you are usually not hampered by this consideration.

We have to remember one thing, that the more business-like an office is, the more work will come to it, for it is certain that if the office is conducted in a business-like manner, the architect who owns it will be a good business man, and it is marvellous how much more work a business man can get through in a day than a man without method, unbusinesslike. Order, it is said "is Heaven's first law;" it is equally the first law of successful business. —a place for everything and everything in its place.

I have seen some offices in London, the great metropolis of the world, occupying the greater part of a house and fitted up in such luxury that one wonders on entering where the work is done. To take one office in particular, you ring at the front door bell of a house that to all appearances is a private residence, except for a small brass door plate which indicates it as an office. A page in livery opens the door, and you enter a spacious hall, furnished with Turkey rugs on a polished floor. By the dim light admitted through a stained glass window you see quaint old oak cabinets, and settees black with age, brass lampstands, oil paintings on the walls, and rich portieres, all helping to confirm the idea in your mind that you have somehow come to the wrong door after all. You ask to see the principal, and you are shown into a side room, furnished with equal luxury, a little more light perhaps owing to the windows being of clear glass, and this shines upon a treasure of an office desk, with easy chair to match, a small collection of books on architecture in a bookshelf with glass doors all richly bound, but you see no T square or drawing board. The door opens, and in comes the principal, clad in a velvet jacket and with a scarlet tie and never a sign of lead pencil stain on his thumb. You tell your business and he touches an electric button; the page appears and is sent to the drawing office to get the drawings you want to see; so you transact your business and depart, ushered to the door by the nightly-buttoned boy. And yet from this office have proceeded some of the most charming and delightful, picturesque and altogether lovely country residences, that adorn the face of modern England. An atmosphere of luxury, but an atmosphere of art, a place for inspirations indeed, but requiring to be seen and experienced to be fully understood.

Naturally one thinks how incongruous such surroundings would be in one's own case. One would not care to have polished floors and Eastern rugs tramped over by the heavy, muddy boots of our contractors and workmen just off a building, and yet the both builders and often workmen should be able to come in freely, even with the objectionable nether casings, is indispensable to us. But the cases are very different—the one I have alluded to is in London, the work of the office is nearly all carried out in the country, and then the London contractor is a big man in his way, wears his black coat and top hat, and never dreams of wearing muddy boots.

We have to be eminently more practical, and the worst part of such an office as I have described would probably be sufficient for us. Plain fittings, high stools, uncarpeted floors, drawing presses all plainly labelled, and writing desks of useful rather than ornamental form; but there is one thing you won't see, and that is the beastly spittoon, for the disgusting habit which makes such an unsightly thing necessary is not a common practice there.

Office management and routine touches one of the three component parts of an architect's nature more than the other two. As an artist, an architect requires good light, and as a constructor, engineer or builder (whatever you like to call it) he requires the handy arrangement of his tools, or instruments, but to the "business man," the office and its arrangements, mainly belong. As a man of business, an architect must have his office apart from his house, and must not be interfered with in his work by domestic calls. I have seen an architect's office, composed of the two best rooms of a small house, in an English county town, where they made working drawings to the squeals of the infants, and wrote their specifications to the thrumming of five finger exercises, and where inspirations for design where wafted on air redolent with the odour of cabbage water and boiling beef. This, indeed, must be a relic of the Pecksniffian age, but it is an actual fact, not borrowed from fiction. Such was the office of a man, an architect, who, having won a competition, had orders to carry out his design for a cemetery chapel at the cost of £3,500 sterling. When the works were completed, the contractor sued the Cemetery Board for another £3,500 sterling for extras (just double the amount of the contract) and got them too. That architect removed from that part of the country shortly afterwards. You will find an account of the proceedings outlined in the London *Building News* about the year 1880 or 1881, but as I was a witness, I can vouch for the tale.

After all, everything depends upon the means the architect can command, but certain things are essential. His office must be separate from his house, he must have sufficient room for all, and as he is a business man, he must see the necessity of this. It is the greatest mistake to let everyone have access to the drawing boards, to let the clerks overhear all the clients have to say, and to let travellers and agents interrupt you, or break in upon an interview with your clients. Sometimes it is an advantage to have an interruption when you are conversing with a client, but it can generally be obtained at the moment without having permanent arrangements made for the purpose, and especially is this so when your client is a woman, but I once had a client in petticoats whom nothing would interrupt, and I could not charge her more than five per cent. Except where such clients are concerned, there should be a time for everything—a certain time allotted every day to the supervision of your buildings in course of erection; a certain time for the visits of agents, and a certain time for your correspondence.

As a rule, the first thing in the morning is the best time for inspection, before you get to the office. Your correspondence is best left to the afternoon, after the last post, when you will have had time to digest your letters, and when you can answer them all together. And as for receiving agents, the best time is your lunch hour, when probably you will be out, or else you can see them sandwich in hand, for they will come, but very few are of any service to you. Everything that interrupts your regular work should be arranged for and have its special time.

A constant cause for prolonged interruption is a request for a certificate by a contractor. Accounts take a long time to go into, and in justice to yourself and your client you are bound to give them careful and serious attention. But sometimes a builder requests a certificate at a moment's notice, to help to pay his wages, or, as the common excuse is, "to meet a note." We are to a certain limited extent, the trustees of our clients in this matter, and any irregularity in the issuing of certificates is not fair upon him. We may be willing to oblige the contractor but it is, by far the best course to have a settled time for issuing certificates, and not to depart from it. It is as well to have a notice to this effect pinned up where contractors can easily see it, and add to it, that no certificate will be granted until sufficient time has been allowed for you to go into statements. Then when accounts are large or numerous you can set apart a special day for the purpose.

A certificate, as has been decided by the United States Courts, is not in any way equal to a draft or a cheque which must be met upon presentation, and a contractor cannot demand payment upon the strength of it. The architect merely certifies that the contractor is entitled to receive a certain sum, for work done, and the certificate becomes evidence in favor of the contractor as against the proprietor, in case he disputes it. But the proprietor, except according to the terms of the contract, is not bound to pay it upon presentation.

Issuing a certificate out of the regular course of events may put your

* Paper read by R. W. Gambier Bousfield before the first annual Convention of the Ontario Association of Architects.

client to considerable inconvenience, or at any rate in an uncomfortable position, he may not be prepared to meet the sudden demand, and it may be unpleasant for him to be obliged to refuse payment for a few days.

In order to help a contractor if really in a temporary difficulty, it is possible to issue a certificate and write across it distinctly "not to be presented for payment until such and such a date." The contractor could then use it to show a pressing creditor that this money is coming to him, but all these ways are best avoided if possible. Once break through a rule and you create a precedent, and if you do it for one, it is hard to refuse it for another. But I must here add a few words on the responsibilities of architects in issuing certificates, which is a point, we shall, I hope, discuss presently. I would lay particular stress upon the fact so little understood even by contractors, that the certificate is not equal to a draft. The law recently has been so strictly enforced, to the harm of individual architects, in various countries, that it behooves us, if we would save our elves from its clutches, to word our certificates in a manner that will relieve us of serious responsibility in regard to work carried out under our orders, but which we have been unable to supervise. Our clients must learn that if they will not pay for proper supervision, they cannot expect the architect to hold himself by his certificate responsible for improper construction.

An important matter and one that requires careful regulation, is the ordering of extras and the payment for them. Some detail requires alteration that will incur extra expense, or some matter not previously thought about, will turn up requiring an additional outlay on the part of the proprietor. Now for everything of this kind, however simple, a written memorandum, signed by the architect, should be given to the contractor. It is only fair to him and to the proprietor, your client, that no work beyond the contract should be paid for unless these orders or vouchers are produced by the contractor, this often forms a clause of the contract, and the contractor must be careful to see he gets vouchers, and ought to refuse to carry out the work unless a voucher is given. But they are often overlooked, extras ordered verbally and carried out, time elapses, and when accounts come up for settlement, you may have forgotten all about the matter and trusting to the contractor you grant payment for it, but it leaves a loophole for a dishonest contractor to pile on the extras, and you have little chance of disproving them. To have to allow them with doubt in your mind, is to say the least, unsatisfactory.

I have found among certain contractors a dislike to signing contracts, not because they wish to get out of them, but because of a weak idea that they are not being trusted, and their feelings are hurt. I have been told, "I never signed any contract for So and So, and I have done thousands of dollars work for him and had no trouble." That is all very well, but business is business, and be a contractor ever so honest, no one can say what may befall him before the works are completed, and if any misfortune does occur to him what have you to show your client, or how can you prove in the event of dispute that the builder was *morally* bound, for legally he certainly is not, and you have no hold upon his "heirs, executors, administrators or assigns." It is not a matter of hurting feelings; where business is concerned "feelings" must not be considered. We are bound from our position in our clients' interests, to see that the proper signatures are attached to the deeds. I know an architect who never obtained the builders' signatures until just when the work was completed and before the final settlement took place. This man ran a very serious risk in more than one direction. His contractor was not bound to perform the works, his client was not bound to pay for them, and he laid himself open to the very serious charge of conniving with the builder to the defrauding of the proprietor.

It is one of the great questions of the day as to whether an architect should have anything to do with the contract. It certainly is lawyer business, and the architect should not have the responsibility of drawing up the contract. Again, the architect, in the interest of his client, has to bind the contractor to do certain things. Everything except payments to be made by the proprietor is to bind the contractor, so that at best it is a very one sided document, decidedly in the favour of the client. The use of printed forms saves a great deal of responsibility, but these in common use to-day are doubtful and unsatisfactory, and the only remedy is for a lawyer to be consulted and draw up a proper form having nothing to do with the architect, excepting that the architect should agree in writing to accept the arrangements entered into between the proprietor and builder, and to assist in their carrying out. But it is of course to the architect's interest that matters should run smoothly between the contracting parties, so perhaps his signature may be dispensed with. Before long, however, we may hope to see some such change made in the contract system.

Now a few words upon tenders and tendering. As a rule if a building tendered for, goes on, it is the lowest tender that is accepted, and naturally the contractor who has sent it in, expects to be employed. But the question is "Who is the lowest tenderer, was he invited to tender, and is he responsible?" If he has come in answer to an advertisement for tenders in the publlic press, he is an invited tenderer and you must respect his tender, for anyone can answer an advertisement and perhaps give you some trouble. Perhaps he has figured the work down very low. He is probably hard up for work, and it looks bad for his creditors if he has no work in hand, and he takes the chance of failing or making something out of the "job." Now unless you have expressly stated that "the lowest or any tender will not necessarily be accepted," this man feels that he has a grip on you, and being unscrupulous, will make the most of it, and unless you can find out anything against him definitely you feel obliged to employ him. It is an unpleasant result of trying to do the best you can for your client. But the best way is *not to advertise*. Have a list of responsible builders to whom you would be satisfied to entrust the work, and have a printed form of post card, with blanks to fill up before issuing, stating that tenders will be received, etc., etc. It is safest always to insert the clause about not accepting any tender of necessity, in case the prices come out too high or the proprietor from some cause or other decides not to go on with the work. In such a case I always consider, however, that the tenderer whose tender would have been accepted had the works proceeded, is entitled to remuneration based on the time taken by him to make up his tender. It is the custom of the profession in England to allow contractors to know how each man's tender compares with the accepted one. Some of the professional journals make a practice of publishing lists of tenders without charge. It certainly is unsatisfactory to a tenderer, when, having spent much time and trouble in making up a tender, he finds himself shelved, and does not know at all whether he was anywhere near the accepted amount.

Perhaps in inviting tenders you have not on your list a man who considers himself eligible for the work, and I have heard some people argue against this method of inviting; because by omitting some one, you might give offence. Now we cannot spare the time to look after contractors to see whether they are fit for our work, and if I have not got a contractor on my list who thinks he should be there, that is his fault; if he wants work from my office he should come and show me that he is eligible, and then I shall be glad to give him an invitation. The safest way or method in the matter of tenders is to know who it is you invite, invite only such as you would employ, and accept the lowest tender unless you have good grounds for knowing that it is too low, and then put up the list of tenders for the tenderers' inspection. I have always found this answer well. If the lowest tender is considerably below the next and there is a fair sequence of tenders above the second lowest, the probability is you will reject that lowest tender, and you have a good ground for doing so. The probability is also that either the tenderer has omitted some item or his tender is fraudulent, and by exposing all tenders received in a list, you lessen the chances of unfair tenders, because the tenderers know that they will be exposed.

Specifications are often written in a very loose kind of a way. Vague clauses are introduced which cover a lot of ground but leave the actual intention of the architect a matter of doubt, to the tenderer; and they are generally made by those who use them to turn out in the interest of the client. "If you have drawn the plans you know exactly what you want, materials and workmanship—and although it takes time to write a detailed specification, it is part of your work to do it thoroughly. Contractors would far rather have a long specification to tender on than a short and vague one. This vague system has been too often made use of by unskilful and unscrupulous practitioners to the defrauding of the contractor; a base and unprofessional action, that it is hoped that the formation of this Association will do much to prevent.

An unscrupulous use is sometimes made of the clause of our contracts which states that the specifications and drawings shall be taken together, and that items shewn on the one and omitted in the other one, as far as necessary to the carrying out of the works, to be included in the contract. This clause only refers to such works as are necessary that must not and could not be omitted, and that the contractor ought to foresee will be necessary. And yet, in the debased condition of professional practice, I have met with cases in which even faint pencil markings over colours have been insisted upon as being included under this clause. When such a clause is inserted the contractor ought to insist that the drawings he has to sign should be inked in.

To keep up the tone of our profession, we should exert ourselves to see that we leave no loophole through which the charge of unfairness can be fired at us. Drawings should be inked in, and all pencil notes and marks rubbed away before the tenderers see the drawings at all. The drawings a man takes his quantities from should be the contract drawings. These having been inked in previously, leave no opportunity for a dishonest or troublesome contractor to dispute. However sharp he may try to be you are safe, as he sees for himself that no alteration or change incurring further expense to him can be made without his seeing the marks on the drawings. You are freed from even the possible annoyance of any dispute.

One thing more before concluding I must touch upon, that is the malpractice of taking commissions from contractors, an action that shames a man, and causes him loss of dignity before the contractor, however bold a face he may put upon it. The action of the Directorate of our Association should meet with our hearty support in putting down this insulting procedure on the part of contractors who offer us commissions. The fellows themselves do not know they are offering us an insult; they have been too much accustomed to having their commissions accepted; such is or has been the deplorably low condition of men who call themselves architects. But gentlemen, we are banded together to stop the disgusting abuses to which our profession has been subjected; it is our aim and object to raise it again in the public estimation; it is easier to drag down than to raise up, and we must be vigilant and eager and have no scruples about exposing cases of unprofessional dealing.

DISCUSSION.

Mr. Gordon said it would be well if the Association would provide a form of certificate, which would be recognized as a standard form, and which would relieve architects from trouble in that matter—both a progress and final certificate.

Mr. Curry suggested that Mr. Bousfield be asked to submit a form that he might think desirable.

Mr. Bousfield did not think any one man should undertake such an important work. It would be better for a committee to act. There were some men who made a practice of putting upon their certificates that they will not be held responsible for any bad work that might have been done under it. The certificate simply meant that the contractor had done a certain amount of work.

Mr. Barke said it appeared to him that a good many persons thought a certificate was equal to a cheque, whereas it was merely a statement that a certain amount of work had been done.

Mr. Curry agreed that something should be done with reference to certificates. If an architect wrote across the face of a certificate that he would not be responsible for the work done, he killed its value. It was simply a question as to how far the architect could throw off responsibility without injuring the certificate. The better plan would be to insist upon a definite understanding with the client as to what duties the architect should assume. It might be agreed that the architect should not assume responsibility for such bad work as by ordinary care and diligence he could not discover. It was simply impossible for an architect to see all the bad work that might be done about a building. It was not fair to hold him responsible for everything. If an architect was to be responsible for all the work on a building, he should receive a remuneration that would be more equal to the risks he had to assume. Five per cent. did not more than pay the architect for his time and trouble. No business man would assume enormous risks without being paid for doing so. There should be some uniform agreement placed in the hands of the clients showing the position assumed by the architect.

Mr. Paull said that if all that Mr. Curry said were admitted, the value of an architect would be lessened considerably. A good deal of faith in men was required in order to get through this world. If proper contractors were selected, an architect could have no doubt that the work would be properly carried out. The trouble, however, was not so much with the contractors as with the workmen, who were frequently inclined to scamp their work.

Mr. Curry said that with reference to Mr. Paull's reply to his remarks, he wished to say that every architect knew that many clients had a most

remarkable ideas of what the architect's duties were. It was simply a question of explaining to the client what an architect's duties were. As a rule, the architect should not be the Clerk of Works. He should only be supposed to say a certain kind of work, and certain standard of work, were necessary to produce certain results. He did not think it should be necessary for an architect to visit a building more than once a week, if the work were properly managed. If the contractor were supplied with proper drawings, and if capable, willing men were carrying out the plans, the work should go on smoothly. It should not be necessary to watch a man in order to prevent him from using soft brick. Some people had an idea that an architect could put up a $15,000 building for $7,500, and some architects endeavored to do so, with the result that they were disappointed. Clients who expected to get a first-class building put up for less than its value, should be told what they would get. A great deal had been said about the best class of work being necessary, but a man could not get it unless he was willing to pay for it. What he desired to see was that this misunderstanding should be removed. On the subject of tenders he would like to hear the views of the architects present. He did not think any architect should reject a tender because he might think it was too low. If he thought a contractor had made a mistake he would ask him to look into the matter again, and if, after doing so a second time, he made no change then the tender should be rejected. This was in a case where tenders had been privately called for. If tenders were publicly advertised for in the papers, and it was intimated that the lowest tender would not necessarily be accepted, the standing of the man in his trade should be considered. He would set a certain value upon each man who tendered. A good man might be worth say ten or twenty per cent. more than an inferior man. If the tender the former sent in was eight per cent. higher than the latter, it would, considering the relative merits of the men, be lower. In this way he would rate each man according to the value of the work he knew that man to do.

Mr. W. J. Smith believed that under nearly all circumstances the lowest tender should be accepted. There were lots of men in every branch of trade in Toronto who were known to do work right up to the mark. Of course if the architect had a doubt in his mind as to the accuracy of the tender, he would do right to ask the man making it to look into it again. But no tender should be finally rejected on that ground. No client should be called upon to pay money out of his pocket simply because the architect might take exception to certain figures. With reference to certificates, he had seen a clause in some that they were not to be regarded as acceptance of the work done. That form had been in use by builders in Toronto for the past fifteen years, and had successfully held its own in the courts.

Mr. Wilson asked if a contractor for a certain work gave figures that were accepted, and was instructed to go to the architect's office and have the agreement drawn up and signed by the architect, and if before the proprietor signed it, he decided to have the work done otherwise, what rights had the rejected contractor.

The Chairman said that if the contract was signed by both parties, it bound both. If a proprietor instructed his architect to accept a tender, he had no right to act contrary to that without notifying him.

Mr. Gordon said that some years ago he had a case somewhat similar to this. He was instructed to accept a certain tender, and he got the contractor to sign. In the meantime the work was delayed at the instance of the client. The contractor had been at some expense in purchasing and holding material, and he sent in a claim. This claim he (Mr. Gordon) considered perfectly reasonable, but the client tried to make out that because the contract was not signed it did not bind him. The matter went to the courts, and the judge would not listen to this contention, and held that as the contract had been signed by the contractor with the intention of the proprietor signing it, it was binding.

The Chairman said there was also the case in which the late Lionel Yorke claimed compensation for the delay of the City of Toronto in not having the excavation for the foundation of the Court House proceeded with. The contract was awarded to him, and the signing was delayed until the City Treasurer, who was away, should return. It was decided some time afterwards that the work should not be proceeded with. Mr. Yorke entered suit to be reimbursed the expenses he had undertaken. He had sent for large quantities of Portland cement. The claim he (Mr. Storm) believed was established and paid.

Mr. Langley said that when a client employed an architect to build a house, he did so because he could not do the work himself, and he counted on the architect's honesty and judgment to have the work properly done. The architect's work was entirely in his own hands. There was no reason why the architect should fret his life away by employing inferior contractors. If an architect was careful of his own credit, he would not do that. When an architect was asked by a client to prepare plans, he was expected to carry out those plans as perfectly as possible. It rested with the architect to say whether the work should be done by an inferior contractor. There were enough contractors in Toronto who could carry out the work faithfully. Architecture should not be a worrying, harassing business.

Mr. Curry said there was another point that should be dealt with, and that was specifications. It was not fair to ask a contractor to tender under faulty specifications. A great deal of this was done from two reasons—firstly, that the architect did not know what he wanted, and secondly, that he might be so pressed that he had no time to decide what he wanted. This was not fair to the contractor. Some men specified "all work must be satisfactory to my client." It was impossible to know what that meant. Others specified that the work must be done in a workmanlike manner. Time was when that was considered sufficiently explicit. Nobody knew what it meant. Under that specification a man might put on a 15 cent or a $15 lock. Now it was the practice to specify more definitely. Sometimes, however, in calling for some particular article, the architects were accused of favoring one special industry. What might be a first-class thing in one house, might not be first-class in another house of more expensive character.

Mr. Bousfield said he would like to hear more upon the subject of tendering. He had not changed his views on that matter.

Mr. Langley said that where tenders were advertised for, he felt that the right was reserved to accept any tender. Where a limited number were solicited to send tenders, he felt it was a matter of simple justice and honesty that the lowest should be accepted. In giving a special invitation to men to tender, it was done upon the supposition that they were thoroughly reliable.

Mr. Bousfield said that was the point he had endeavored to bring out. In inviting special men to tender, only reliable men were asked. It was impossible to get beyond the fact that clients as a rule wanted to make the most out of a small sum of money. If an architect accepted a tender that was $500 higher than the lowest, there would be apt to be some difficulty.

The Chairman said that if a certificate were granted, it would mean that the architect was prepared to accept the work it represented. Of course there might be a private agreement between the architect and the contractor that any work that was not up to the mark should be improved, but the architect could not relieve himself of responsibility in the matter. With regard to tendering, it was a well understood principle that if tenders were advertised for with the proviso reserving the right of selection, it was quite fair to decide according to the merits of the men who tendered. If special invitations were issued, they would only be issued to men who would be acceptable, and consequently the lowest should be awarded the contract.

Mr. Gordon's motion, with reference to the special form of certificate, was put and carried.

Mr. Helliwell moved that a vote of thanks be tendered to Mr. Bousfield for his excellent paper.

Mr. Curry seconded the motion, which was carried.

WINNIPEG.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

THE building season is rapidly closing down in this city as far as applies to outside work, but there is considerable stir in several branches of the trades owing to buildings being started rather late in the season, and therefore carpenters, heating engineers, plumbers and painters are very busy completing the several contracts. As an example of the quantity of hot water heating yet to be done, Messrs. N. D. McDonald & Co. have contracts amounting to $6,500.

Messrs. Rourke & Cass, the contractors for the new N. P. depot, hotel, train shed, &c., have succeeded in roofing in the depot, and are confident that the employees of the company will be at work in their splendid new offices by the middle of January. The new depot, although plain, is a very imposing building of three stories, and half story basement, faced with St. Louis red brick, with brown stone dressing. The train shed will be covered in a few days, when passengers for the first time in Winnipeg will step off or on the cars under cover. The stonework of the new hotel has been completed up to first floor level, and will be allowed to stand until spring.

Mr. Chatterton, the well-known architect, of this city, has just completed thorough transformation in the McArthur Block, both inside and out, for the London & Canadian Loan Agency Co., and the Confederation Life Association are just beginning to rearrange the inside of the block hitherto known as the Beggs block. This building is to be fitted up as offices and residential chambers, all to be heated with hot water, and lighted by the incandescent light. Messrs. Timewell & Son, are the architects.

The new city market is complete, except the heating, which is being done by the firemen under the superintendence of the City Engineer. This is quite a new departure from the ordinary custom, which should gratify the most rabid political or municipal economist. The outlook for the building business for next year is very promising. All the architects have already received instructions for considerable work, and 1890 will be the busiest year yet experienced for Winnipeg and the province generally.

MONTREAL.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

INTERESTING TO ARCHITECTS.

W. McLea Walbank, architect, vs. the Protestant Asylum for the Insane, was an action in the Superior Court brought by Walbank against the governors of the Insane Asylum, to compel them to submit the plans for their new Asylum to experts or to pay him the value of his plans. The case was heard before Judge Tait recently. The plaintiff proved that an advertisement appeared in the public press asking architects to compete "for the best plan of accommodation for two hundred and fifty patients, cost not to exceed eighty thousand dollars ($80,000). For further information apply to G. B. Burland, President." Mr. Burland's evidence went to show that Walbank, anticipating that the competition would not be free and fair, so informed the said President, and asked him if the decision would be

free from local bias, to which the President replied that everything would be done fair and above board, and that Doctors Workman and Buck, of Toronto, would be the experts named to decide upon the best plan. He further stated that the architects who were awarded the building never competed for it. Mr. Hollis, Secretary of the Board, proved that a resolution was passed authorizing the advertisment in the public press of Ontario and Quebec, and the names of Workman and Buck as referees. He also proved that plaintiff's plans were never submitted to said experts, and that a sealed envelope containing a builder's estimate to erect the buildings according to plaintiff's plans and specifications was opened at the meeting, although endorsed on the outside *"not to be opened unless plans are accepted,"* that an abstract referring to the cost of the building was copied therefrom into their minutes. Mr. Hopkins, architect, swore that he paid no attention to the advertisement in the paper, that he was employed at the asylum work since 1881, and had prepared several plans for them, that he submitted no plans for the present competition, that some time after the expiration of the time allowed for the competitors' plans to be sent in, he was notified that the governors had passed a resolution asking him to allow his plans to be submitted in competition, but that he never replied to it. J. C. Wilson, M. P. swore that he passed the resolution referred to by Mr. Hopkins, because he thought that Mr. Hopkins, having been engaged for so long, would know best what they wanted. Other witnesses on behalf of the asylum stated that the plans they adopted were chosen because they were cheapest, and that they were exposed in the Mechanics' Hall to public inspection for a week. Judgment was given in favor of the defendent, the court holding that the plantiff did not comply with the advertisement because he did not prove that the buildings could be erected for the eighty thousand dollars. The case is likely to be taken to Appeal and tried before a higher court.

The judgment above referred to, unless reversed, will form a precedent in future for all architects competing in the Province of Quebec, and in the meantime I would advise those sending in plans, where they are limited in cost, to be sure and label them "This building can be built for so-and-so," otherwise you will "get left."

CANADIAN SOCIETY OF CIVIL ENGINEERS.

The Society at its last meeting decided to hold a dinner at the Windsor Hotel on the evening of the 23rd January, at which ladies will be admitted as guests, in place of the conversazione as heretofore. A movement is also on foot to have a convention meet during the summer in some of our western or American cities, and a committee was appointed to report at the annual meeting.

CONTRACTORS' ASSOCIATION.

At the annual meeting, of the above Association, Mr. William Rutherford presiding, Messrs. Joseph Brunet, C. T. Charlebois, F. Fourniet, J. B. Drapeau, M. Martin and Joseph Lambert were elected directors.

MISCELLANEOUS.

The plasterers are agitating for an increase of wages from $2.50 to $3.00 per day and talk of striking if they do not get it.

The building inspector and drain inspector state that the practice of using bad mortar is on the increase, and have recently taken legal action against several contractors.

The Fire Committee has been asked by the Underwriters to sanction the appointment of an inspector of buildings in course of erection on their behalf, with the view of preventing structural defects which would be dangerous in case of fire. The insurance people will pay this officer themselves, but desire the city to pass a by-law to give him power to act in the direction desired. It is altogether likely that the desired by-law will be recommended to council, as it is felt that such an officer would be of much assistance to the city inspector.

THE PERCH AS A STANDARD OF MEASUREMENT.

Editor CANADIAN ARCHITECT AND BUILDER.

SIR,—My attention has been drawn to the statement made in your columns by "Comment," that 16½ cubic feet constitute a perch of stone-work, instead of 24.75, as published in one of my articles on estimating. Now if "Comment" will consult Messrs. Orton & Ladler's calculation, the Normal School Arithmetic, or any practical builder in the Atlantic or Middle States, he will see the accuracy of my figures. It is however evident, that there is not a standard for the perch; as I have recently seen the question asked from Minnesota also concerning its actual dimensions. "Comment," therefore, if figuring on stonework, can calculate its quantity by 16½ cubic feet, or by the whole number of cubic feet the work contains at price per cubic foot.

The system of calculating by the perch is obviously a defective one, and builders will rarely find it in an architect's bill of quantities, for the reason that were the architect to call for any number of perches of stone, owing to the variation of the different quantities in the perch existing (according to custom or usage) in different localities, serious complications might arise. For instance, if 50 perches of stone be required for a foundation, one builder figures it at 16.50 to a perch, another 24.75, another some other quantity. Now if the drawing be not carefully scaled, and the exact solid content found by the estimator, it follows that he who uses 16.50 will be short if the architect figured it at 24.75, and he who uses this quantity will estimate correctly. If on the other hand the architect intended, or rather if the drawing measures 50 perches at 16.50 to the perch, then the 24.75 estimator will be largely over in his calculation.

Bills of quantities are often made out roughly in architects' offices, and I would recommend all estimators to go over the plans very carefully, and if there be a mistake not to hesitate to show it to the architect. Architects are usually very honest men; besides they do not like extras, and an over quantity not called for must be put in as such.

Estimators ought, as far as possible, to make out their own quantities directly from the plans, then they are certain of their measurements.

It gives me pleasure to see questions of this kind crop up, as I have no doubt that, like a drag net, they will bring to the surface some of the snags on which many an estimator has been wrecked.

Respectfully yours,

"CATO."

PUBLICATIONS.

OUR excellent New York contemporary, *Building*, has changed its title to *Architecture and Building*, in order that its scope may be the more readily understood. The New Year number just to hand, bears a new heading of appropriate character, and embraces a couple of new departments which should further increase the interest of its readers.

We have received from Messrs. Palliser, Palliser & Co., 24 East 42nd St., New York, a copy of a work entitled "American Architecture." The aim of the work is stated in the preface to be "to present a variety of plans which, with few additions and changes, can be adapted to the requirements and individual tastes of those who build, whether living in town or country." This is a laudable ambition which many other publishers have shared, but the results of their efforts have not worked out so satisfactorily in practice in some instances as builders could have desired. The present work, bound in cloth, is sold at $2.

MANUFACTURES AND MATERIALS

STRENGTH OF LEAD PIPE.

MR. George L. Knox, of the Colwell Lead Co., in writing on the strength and durability of lead pipe, says

"Lead pipe will sustain quite a heavy pressure if it is applied without shock, but in all practical work, in the plumbing of houses especially, the column of descending water suddenly stopped by the closing of a faucet exerts an increased pressure that will burst pipes which would stand a very much larger weight of still water. If the safe working pressures given in the table referred to were only slightly in error I would not think it necessary to call your attention to them; but my practical experience has shown that the figures there presented are very far from consistent with safe practice. Perhaps the best evidence to present in support of my views are instances that occurred in practical work.

"When aerated bread was first made in this city we were asked to furnish a tin-lined lead pipe under 2 inches diameter to stand a pressure of 140 pounds to the square inch, the pipe to be used for conveying the carbonic acid gas which was forced through the dough after it was mixed. We furnished for the purpose AAA pipe, but it would not stand the pressure. We then made for them a heavier pipe, but with no better results. Finally, we made a pipe that was at least three times as strong as AAA pipe, but even this did not stand the 140 pounds pressure. Of course these pipes did not give out at once and the strongest lasted a few weeks but eventually the lead swelled and burst. The parties for whom we furnished the pipe were finally obliged to use an iron pipe, tin-lined, the tin being necessary to prevent the corrosion of the iron by the carbonic acid gas. You will notice that the pressure was only 140 pounds to the square inch, and according to the table you printed the 'safe working pressure' of all the AAA pipes under 3 inches was considerably in excess of this figure."

Mr. J. C. Paterson, of Paterson Bros., Toronto, Montreal and New York, has purchased a valuable plant and mill at Portage la Prairie, Man., and will commence at once the manufacture of building paper.

On the night of the 10th inst., the Adamant Manufacturing Co.'s premises, Esplanade St., Toronto, were seriously damaged by fire. As our readers are aware, the Company only recently commenced business in Canada, and sympathy will be felt for them on account of the misfortune which so soon overtook them. With commendable pluck, however, they have undertaken the work of reconstruction, and will soon be in as good a position as before.

Mr. E. W. Rathbun, of Deseronto, in a recent address at Kingston said: "The products of our limestone, marble, granite and sandstone quarries, within this area found in variety and abundance, are called for and used in Chicago, Cincinnatti, Toronto, Montreal and other cities of both countries. The vast deposits of carbonate of lime, of marl and clay, but recently miles apart, and now, through the construction of railways, brought together, will shortly yield a Portland cement, for which hundreds of thousands of dollars go out of the country yearly, and which, more than in any other section, is needed within and about this centre for the numerous locks, dams and retaining walls of our vast system of canals and hydraulic privileges. Our quarries of native cement, not forty miles from this institution of learning, are equal in quality and quantity to the famous beds in New York and Ohio, and yet are only now becoming recognized.

DECORATION AND FURNITURE

ARCHITECTURE WITHOUT DECORATION.*

THE buildings which have no statuary may be, like the admirable Trocadero palace, fine in a mass and in minor proportions, but they will be nearly bare of details, without moldings (and how much they lose in losing these!), without sculptured ornament, without color, except some two penny scraps of blue and gold in the upper members. An excellent colossal statue crowns the edifice on the Trocadero, and interesting groups of heroic size form accessories and outworks to it, but it is too vast to have realized sculpture lavished upon its whole mass, and therefore it is bare.

Nor is there any prospect of bettering the condition of our workmen or of bringing them nearer in harmony with the task that is set before them. The tendencies are the other way. Machinery, labor saving contrivances of a hundred sorts, individual personal ambition to be thought an artist and to rise in some way out of the role of handicraftsman, and the almost absolute disappearance from modern life of any understanding of decorative design which, so far as I can see, is recognized only in gentle harmonies of subdued color and in a certain play of metallic or textile surfaces, not in delineation nor in modeling; these and all the influences of the day warn us not to expect any nearer approach to the conditions requisite for Gothic art. We have to face the situation and try to realize that if one thing is not possible, another is; that, if we cannot get workmen who are also decorative artists, we can still get workmen, and we can still get artists. That is our hope, and our only hope—for, bear with me while I continue to insist upon the incapacity of our community for decorative design. Consider: Have you ever known a man who could fill a panel with leafage in relief and cast the parts so as to occupy the space beautifully, solids and voids balanced, and the pattern or scrolls of foliage so kept up from the background, that at thirty feet, as well as at three feet, it looks well—looks like a successful design? Do you suppose there is one designer in New York who can do that, unless he is frankly, consciously copying Renaissance work, or Indian work? Or are there actually two or three whom you could name? Let there be two or three, and my point is equally well established. It is not by an individual here and there that the demand for decorative art shall be supplied.

No modern decorative work even seems good, is even attractive and agreeable, unless it is closely imitated from ancient work. If it is a carpet we have to design, we study Indian, Persian and Anatolian rugs; if it is wood inlay, we study Italian fifteenth century and modern examples; if it is metal relief, we study Japanese stamped and Italian hammered work; if it is wrought iron, we study French and German fourteenth century *fleurons* and *grilles*; and, unless we stick close to our originals we are lost. There are some industrial arts in which it has not been the fashion to study and copy ancient examples; thus the porcelain and delf for our tables are not often copied, and they are hideous. One never by any chance sees a dinner set to which he would willingly sit down. Mr. Briggs, at the famous corner of Washington and School streets (need I say in Boston?), had a tea set two years ago which were lovely; but it was painted with realized and very faithful sprigs of roses, no two pieces alike. Of ceramic painting we shall have to speak by and by; but now consider furniture. It is very curious to compare the sideboards and tables made by the English during the past fifteen years with what the French have produced during the same time. The English, having passed through a Gothic experiment and the Queen Anne fad, are working on general principles, combining all sorts of ideas with boundless ingenuity and energy, and the result is curious and interesting, but dismally ugly. The French, tranquilly working on traditional lines, turn out cabinets and tables of really extraordinary beauty, with sculpture which is worthy to be put beside the ancient work which it imitates. A French town of forty thousand people will have two or three good carvers, or really more than that, for each such workman has a helper or two who can do parts of the work with great acceptance. They can carve for you panels and friezes for a *lit Louis XV.* or a *babut Louis XVI.* with marvelous ease and fidelity to style; and, when they have no job in hand, they or some of them can produce deceptive pieces to take in the unwary amateur. The furniture they produce, in close imitation of styles of the seventeenth and eighteenth centuries, is as superior to the English furniture in comeliness of proportion and in beauty of sculptured detail as it is inferior in novelty, in originality, if that word may be used for what is unsuccessful. So with silverware; our American silver for table use, and for our few occasions of ceremony and show, has been wonderfully original; its makers have been studious of many styles and anxious about all methods of work, and careful of its handicraft. But the regular traditional designers of the Parisian workshops produce more graceful and more satisfactory designs. No one else can engrave, or chase, or inlay with gold and copper a salver or a goblet as the Frenchman can, because they do very nearly what their progenitors did, and copy frankly. We are driven to copy all really ornamental work, all patterns, all scrolls and tracery, all simple embossing, all weaving, all embroidery of garments and the like, all inlay, all architectural carving—under the penalty of spoiling our work if we try to be original.

An able man whom I may name as, to our loss, he is no longer an American artist, Alexandre Sandier, had a good opportunity one year, in the prime of his strength as draughtsman and designer, to work at ceramic painting on a rather large scale. He had returned to his native place near Corton, below the Golden slopes of Burgundy, and had found there a newly established factory of faience; he spent much of his winter in experiments and with some practical result. Besides the scores of failures and the many pieces he left with friends in France, he brought some huge plateaux and many plates and dishes to America, some of them failures in firing, indeed, but all interesting as attempts in the decoration of simple articles.

His conclusion was that modern ceramic decoration must be by means of pictures; by views, landscapes, heads, portraits, what you will. I have a plate on which, in manganese voilet, he has painted an opening in winter woods, a road passing into the forest, covered with trodden snow, and a French soldier lying dead face downward, in the snow and mud. All this is as far elaborated as the monochrome would allow. He tried decoration in various styles also, but his conclusion was this: we must leave to the Orientals the decoration by means of scrolls and formal patterns and conventionalized leafage; a stupid Chinaman at sixpence a day can beat our best man, at that; we must do what the Chinaman cannot do, and bring the best science we possess to our pottery painting.

The French potters have felt the same truth, and the only important modern ceramic products, of course, excluding the copies of old works of art have been, I think, the huge deck platters and the like, upon which great peonies or poppies disport themselves freely. If it is said that they are not wholly realistic, that they are conventionalized, after all, the answer is, I think, that they are not consciously conventionalized, that the artist, a practiced flower painter, has got into his work all of the poppy or peony that he possibly could. Oil painting of flowers on canvas is conventionalized because it has to be; water color flowers are conventionalized because nature is too subtle for the artist; in this way and no other, are the French flowers on faience other than fully realized.

We need a definition for the term "decorative art," and we need a good term for that art of representation and expression which is not primarily decorative. One writer of our time makes careful distinction between "art" and "decoration;" but that seems to lead to greater confusion. The distinction to be drawn is this: If a drawing or a modeling is done to explain and express the thing represented, or to convey the artist's thought about the thing represented, that, on one hand, is art of representation and expression; let us call it expressional art; if, on the other hand, the adornment of a surface, a weapon, a utensil is chiefly sought, and the natural objects represented or suggested are used only as suggestions, to furnish pretty lines

* Read before the New York Architectural League, by Mr. Russell Sturgis.

and pretty tints, which lines and tints might have been found or invented apart from them, were man's mind more creative than it is—that is decorative art.

Consider stained glass. The most magnificent windows I have ever seen have been produced now and here—now in the fourth quarter of the nineteenth century, and in inartistic and half civilized America. But they have been the productions of highly trained, highly ambitious, highly paid artists. When they are compared with even fine ancient glass, the ancient glass suffers. There are windows here in America that beat the windows of the Saint Chapelle; yes, or those of Fairford Church; yes, or those of the Reims;' not as decorative art, of course, but in splendor and interest, as a consummate painting by a master surpasses a piece of Tarsia or a Chinese enamel. For the American windows are elaborate pictures, for which prices, enormous and yet inadequate, have been paid. And into each of them the artist has put his whole accumulated strength of knowledge, and has avoided no care nor patient preparation. They differ radically from paintings on canvas or plaster, else they would not be good, because light-transmitting color and design is a very different affair from opaque and light-reflecting color and design; but the one equally with the other is expressional art in the first place, and decorative art only in the sense that anything lovely is a decoration.

Consider mosaic. Of that we cannot be so sure, because modern mosaic has not succeeded as yet. It may be that the limitations are such that only decorative art can be achieved in mosaic. If so, we may be sure that modern mosaic will not succeed, and that the medium will be used only by archæologically minded architects, ecclesiologists and the like, and those enemies of their kind who restore ancient buildings. Apart from these, mosaic will be tried by and by in earnest, as glass has been; either it will be found capable of being treated for expressional art, or it will be abandoned. Of such decorative treatment of the draped and crowned and jeweled human figure as we have left us in San Vital, or San Apollinare, or San Marco, no modern, working otherwise than as a mere copyist or adapter, is at all capable.

Consider wall painting. Send the mind to Assisi, to the Riccardi Chapel, whither you please. Recall the painted splendors there, and compare the more ancient with the more recent. The older are the more conventionalized, because the artist could not so well represent nature nor express his thoughts. Raphael painted in the Vatican and Pinturicchio at Sienna, and, even Giulio Romano at Mantua, on plaster, as well as they knew how, with as complete realization as their materials allowed them, exactly as Tintoretto painted on canvas at the school of San Rocco. And so our modern painting will be done. So it is being done to-day. The wonderful borders of the pictured panels at Assisi, and such checkered and intertwined patterns as those at Lodi or Vercelli are out of our reach, as comparatively impossible to us as an Indian shawl. But we can get the pictured panels; we must pay pretty well for them, indeed, but what is ten thousand dollars, more or less, when New York has to fill a church wall.

Never mind now the question of fresco or oil, water glass, spirit varnish, encaustic and the rest; the question whether wall painting can be made to endure gas and furnace heat and sudden changes of temperature and changes of humidity. If we Americans have an atrocious climate, we are thought to have the intelligence to wrestle with it; when we need to protect our wall paintings, because we have some to protect, we shall find ways and means. Never mind these questions, the vital, the interesting question is this, whether if we provide walls and demand realized and complete painting for them, the painting will come. And we need have no doubt that it will come abundantly, freely and cheaper than we can now imagine it to be, as the painters get their hands in.

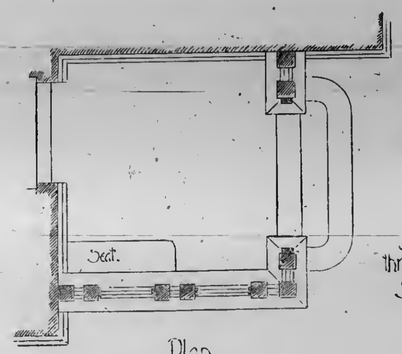
With all this we can see whither we are being led. The architecture of the future is not to be Gothic; nor is it to be Romanesque, nor French Renaissance, nor any style which demands decorative sculpture and is poor and nude without it. The mass of our future building is to be simple, heavy, massive, comparatively unorganized; perhaps not a mere torpid ponderosity calculated only to shelter us and to afford a background for the work of our artists, but something in that way. Cut stone, which has already nearly vanished from among our industries, is to become a tradition. Terra cotta is to cease imitating stone, and to become a means of carrying out bas reliefs and fully realized sculptures of all kinds, in a material which can bear the weather. Moldings I think we may keep, if we choose to, though it may be that the tendency of our building will be to forget them, to ignore them as no longer a part of an architectural programme. Columns we shall keep merely for the sake of the beautiful material of which the shafts can be made. Capitals indeed may be sculptured, but they are more likely to become blocks of some beautiful stone, prettily contrasting with the shafts, or hollow bronze baskets, or rings from which will project the bulbs of the electric lights. Arches will be of any shape that comes handy, and built anyhow, segmental and basket-handle shaped when there is little room, fantastically oriental in curve where there is space enough. Scientific construction will be only interesting in so far as it is economical and saves our money for the more artistic work which needs it so much.

Beauty of proportion will remain to us only so far as it is easy to secure in the simplest masses, only in a general harmony of relative width and height, length and breadth; and in openings somewhere near their true relation to one another and to the wall surfaces that surround them. Elaborately organized building will cease, and in this way something will be done toward cutting down the monstrous cost of modern work. Our work will cease to be northern, and will become like that of Sicily or the south of France, where materials, no matter what nature so long as they are hard and heavy, are encrusted in the solid shell of mortar. The vault will be non-elastic, unyielding, a solid eggshell, as it was under the Roman Empire. The whole will be built up by aggregations of concrete in wooden molds, with the thinner walls of brick as they are with us to-day.

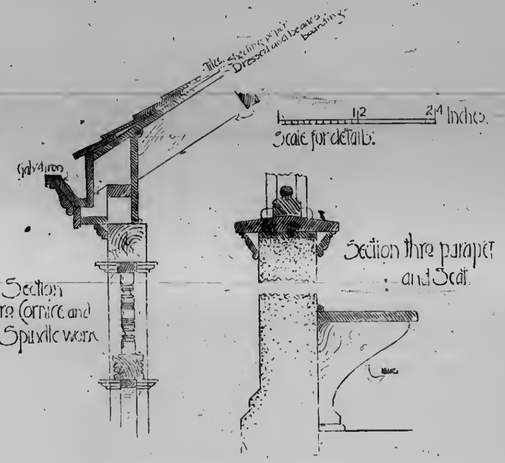
The problems for the constructor thus simplified, and those of the decorative designer given up, as beyond our strength, the architect will become an organizer, a distributor of the work of the painter and sculptor; providing the well exposed, well lighted wall surface for the one; and for the other the salient angles and dusky niches which his statuary needs, and the sunny and sheltered nooks which his bas reliefs require. Nor is this so sad a prospect. There is no need to despair of architecture because we can no longer work as they worked in the sixteenth century. There is to be a Protestant Cathedral in New York, and we know that if it is to be a Gothic structure, it will be a failure, and less beautiful than the bare hill on which it is to be placed. The combined talent of the closing years of the nineteenth century is not capable of producing a Gothic cathedral; but suppose that the programme was to be like this: Vast and well proportioned vaults like those of the Basilica of Maxentius, covered with mosaic, of gold, as in San Marco, or of green and blue, peacock fashion, as at Ravenna, with groups or a frieze of figure subject at or above the springing line; the walls below smoothly sheathed with semi-precious stones, like, again, San Marco, where the slabs are set edge to edge without molding or border, and are reversed as to grain, exactly as we treat veneers to make a natural pattern; the columns of whatever beautiful stone we decide to employ; we don't know yet what we can find, but there are plenty, if we do not ask—as we shall not ask for strength. The capitals may be prettily shaped lumps of the same or kindred material, or may be groups of figure sculpture, something as are those of Milan, the best thing there is about that hideous church. The floor to be Opus Alexandrinum; so much ornamental design as will lay out a pattern of circles and triangles, I suppose we must allow. And along the walls at the best height for examination and the best point for lighting, we will have a belt, ten or twelve feet wide, and hundreds of feet long, filled with wall painting of fully realized character, naturalistic as, say, the work of Paul Veronese, the king of wall painters, the model man, the great adept, the one who has best known how to make a vast composition permanently splendid to the eye. Incrusted in the marble or alabaster of the wall will be the bas reliefs of religious or historical or emblematical subject. And statuary will be abundantly used, either set free between the piers, as at Orvieto, or ranged on each side of a nave or aisle or choir, as at Innsbruck, or, as one had rather see it, perhaps, so clustered around the greater piers, as of the entrance to the sanctuary, or those which carry the dome or tower, that it may seem to help to make up their mass and weight, and give character to what would be otherwise very severe, very square, very naked indeed.

Canadian Architect and Builder Competition.

For an outside Porch submitted by "Mi Yodea"



Plan.



Scale for details. 1/2 2 1/4 Inches.

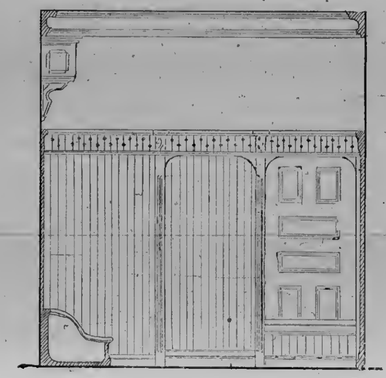
Side Elevation

End Elevation.

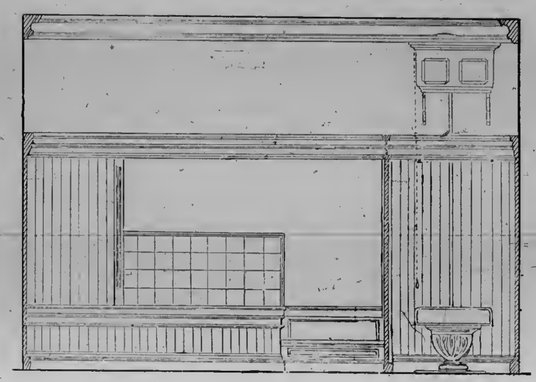
Scale for Plan and Elevations 1 2 3 4 5 6 7 8 9 10 Feet.

COMPETITIVE DESIGN FOR FRONT PORCH.

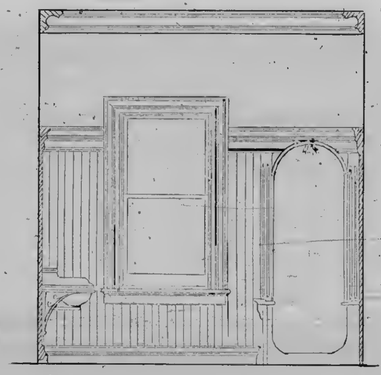
By "Mi Yodea" (Ernest Wilby), Toronto.



Cross Section



Longitudinal Section



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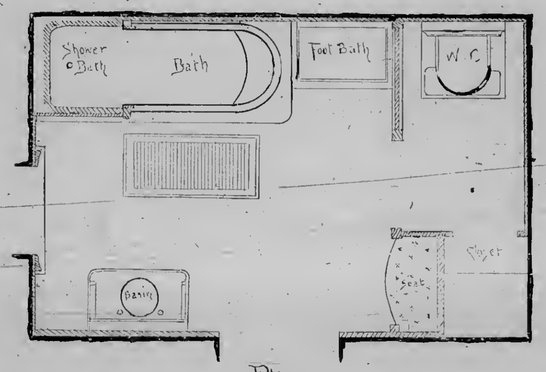
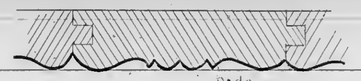


Plan



Dado Sheathing. Full Size

"Bird's-eye" View of Bath Room

Scale:- 1/2 to the Foot.

Longitudinal Section

COMPETITIVE DESIGN FOR—BATH-ROOM.

By "Birds-Eye" (E. G. Bird), Toronto.

CANADIAN ARCHITECT AND BUILDER

FINE AND INDUSTRIAL ARTS · DECORATION · FURNISHING
CONSTRUCTION · SANITATION · ENGINEERING

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—THE—
CANADIAN ARCHITECT AND BUILDER,
A Monthly Journal of Modern Constructive Methods,
(With an Intermediate Weekly Edition—The CANADIAN CONTRACT RECORD,)
PUBLISHED ON THE THIRD SATURDAY IN EACH MONTH IN THE INTEREST OF
ARCHITECTS, CIVIL AND SANITARY ENGINEERS, PLUMBERS, DECORATORS, BUILDERS, CONTRACTORS, AND MANUFACTURERS OF AND DEALERS IN BUILDING MATERIALS AND APPLIANCES.

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SUBSCRIPTIONS.

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ADVERTISEMENTS.

Prices for advertising sent promptly on application. Orders for advertising should reach the office of publication not later than the 12th day of the month, and changes of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of technical value published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The Ontario Association of Architects has appointed the "Canadian Architect and Builder" its official paper.

The publisher of the "The Canadian Architect and Builder" wants to ensure the regular and prompt delivery of this Journal to every subscriber, and requests that any cause of complaint in this particular be reported at once to the office of publication. Subscribers who may change their address should also give prompt notice of same, and in doing so, should give both the old and new address.

INTERMEDIATE EDITION.

ON Saturday, the 22nd inst., we shall commence the regular publication of our weekly intermediate edition, the CANADIAN CONTRACT RECORD. As the name implies, the purpose of this weekly edition will be to present as complete a record as possible of contracts open to tender. A list of important contracts awarded, and when obtainable, the prices at which they were obtained, will also be given. The members of the Ontario Association of Architects, comprising upwards of 95 per cent. of the architects of the Province, signified by resolution at their recent convention, approval of this new enterprise, and pledged themselves to place in the columns of the CONTRACT RECORD all advertisements asking for tenders. This is alone sufficient to make this intermediate edition of great value to every contractor. Each subscriber in good standing to the CANADIAN ARCHITECT AND BUILDER is entitled to receive the CONTRACT RECORD without extra charge. The names of regular advertisers will be published in a properly classified directory on the same liberal terms. The CONTRACT RECORD will be mailed or delivered to subscribers every Saturday. The date of publication of the regular edition of the CANADIAN ARCHITECT AND BUILDER will in future be the third Saturday in each month.

THE pressure upon our space compels us to hold over several articles of interest for future publication. In our issue of March, we hope to present some thoughts for the consideration of Canadian Master Builders arising out of the proceedings of the recent meeting of the National Association of Builders of the United States, at St. Paul, Minn.

THE leakage of water from a street hydrant led to the sinking of one of the walls of the new Northern Pacific railway offices at Winnipeg. It has been found necessary to take the wall down and re-build it. The cost of so doing will amount to about $6,000, and the owners of the building have entered an action against the city for the recovery of this sum.

MR. Sproatt's resignation of his position as City Engineer of Toronto, and the appointment of Mr. Jennings, of the C. P. R. staff, as his successor, are the most important matters with which the new City Council has been called upon to deal. It is understood that Mr. Sproatt's valuable services will be retained for the city as Assistant Engineer. In this capacity he will be relieved of the worry incident to the management of the Works Department, which has been the means of seriously impairing his health. Mr. Jennings, while more familiar perhaps with railway than civic engineering, is said to be an excellent manager, and this is what the situation appears to demand.

THE advisability of appointing a "city architect" is engaging the attention of the Toronto City Council. There is something to be said for and against such an appointment. It is undesirable that all city buildings should be designed by one architect. Variety and not uniformity of design should be the object sought. For this reason the method of employing the services of different architects is to be preferred. On the other hand, it is evident that the services of a capable superintendent of building construction for the city are much needed. The person appointed to this important position should be a thorough mathematician, and should be perfectly familiar with every detail of modern constructional methods.

ON a previous occasion we stated that the important work of plumbing inspection in a large and rapidly growing city like Toronto, could not be efficiently performed by two inspectors. Three or even four inspectors would be none too many. We are pleased to observe the following reference to the matter in the Mayor's inaugural message for the present year, indicating that an effort to secure greater efficiency in this department is likely to be made: "The inspectors of plumbing should also be maintained in sufficient number to do the work thoroughly and expeditiously. Last summer frequent complaints were made about delay in plumbing inspection, and I believe these delays arose from want of a sufficient number of men to do the work. It is very important for the health of the city that the Plumbing By-law should be efficiently carried out, and this can only be done by a competent and sufficiently numerous staff of inspectors."

THE gratifying information reaches us that steps are being taken to form Architectural Associations for the cities of Montreal and Quebec. The promoters of the movement have the best wishes of their professional brethren of the O. A. A. It is to be hoped that the architects of these two cities will not stop short of attempting to form an Architectural Association for the entire province of Quebec. We hope to be in a position to state in our next issue that the work of organization has been succesfully accomplished.

THE Montreal Subway Company is seeking incorporation for the purpose of conducting electric wires underground. Further, it seeks to be clothed with powers such as would enable it to work its own will and snap its fingers at any efforts on the part of the city to control its operations. It wants a 40 years' franchise for nothing, to be protected from the interference of any other company, and to have the right, after giving the city eight days' notice, to open the streets, roadways, alleys, and so forth, for the purpose of laying underground the conduits. In short, this enterprising company seems to "want the earth." We cannot for a moment believe that the Legislature of Quebec would saddle the city of Montreal with such a monopoly. It behooves the City Council, however, to be watchful of the city's interests in this matter.

THE Building By-laws of the city of Toronto provide that "no person shall commence the erection of any new building, or the repair or alteration of any old building, within the fire limits A, B, C, and D, unless and until they shall have first submitted the plans and specifications of the proposed building, alterations, or repairs to the Inspector of Buildings for his inspection, and shall have obtained his written certificate that the proposed building, alterations or repairs, are in compliance with the provisions of this By-law, and will not involve a violation of any By-law or regulation of the City relating to prevention of fires or the erection, repair or alteration of buildings." So far as our observation has gone, the above clause is disregarded in a very large number of instances, and the attempts made to enforce compliance therewith are of the feeblest character. We have already pointed out the fact that permits which should be obtained before work is commenced, are in most cases not obtained until the building is well under way or nearing completion. It is not unreasonable to suppose that under such a slip-shod method, the provisions of the by-law are frequently violated, yet we seldom or never hear of work being ordered to be done a second time on that account. While the City Council are considering amendments to the by-laws designed to govern the erection of buildings, they would do well to endeavor to secure the efficient administration of these laws.

THE report of the committee appointed by the Toronto City Council to consider a method of regulating the erection of scaffolds within the city limits fully bears out what was said in the January number of this journal on the subject. The committee say they think it impossible to frame a by-law which would be workable and which would state just how every scaffold should be erected, as the circumstances under which they are to be erected differ so materially. They have come to the conclusion that the better plan is to let the city commissioner, or inspector of buildings, be the judge, upon complaint, as to whether a scaffold is safe or not, and would recommend that by-law No. 627 be changed so as to read as follows: "When information comes to the inspector of buildings, or when by any means it comes to his knowledge that any building, or portion of a building in course of erection, alteration or repair, within the city limits, or the scaffolding or hoists connected therewith shall be deemed unsafe, he shall immediately examine the same; and should he decide the same to be unsafe, he shall immediately stop all work connected with the part of the building so condemned, and shall at once notify the owner, contractor or agent to make the said building, scaffolding, hoists or other work so condemned, perfectly safe, and any owner, contractor, agent or workman who does work, or allows work to be done upon said condemned work (except for the purpose of making the same safe) until he has received a certificate from the inspector that the said condemned structure has been made safe, shall be subject to all penalties of this by-law." The committee cannot overlook the fact that after all, the workmen who erected or are employed upon a scaffold are the very best judges as to whether or not the scaffold is perfectly safe, and would strongly recommend workmen who suspect a scaffold or building to be insecure, to refuse to work upon the same, and to instantly notify the commissioner's department that such scaffold or building is supposed to be unsafe. The committee had before them correspondence from the principal American cities, and find that in no case have they a specification defining just how a scaffold should be built. It is also recommended that placards should be placed upon all buildings in course of erection or alteration, informing the workmen engaged thereon of the provisions contained in by-law 627 for their protection, and that all complaints made by workmen or others will be held in strict confidence.

IT seems very strange to the profession that, notwithstanding all that has been written concerning competitions and the manner in which they should be conducted to meet with a response from the best men, instructions such as those issued by the city of Quebec should still be prepared in all seriousness, believing that they are all that architects can wish for, and that they will result in the selection of a superior and unobjectionable design. These instructions have been prepared with great care and in the most elaborate manner. Much instruction and advice has also been offered for the benefit of competing architects. Here and there pithy statements have been made as to this and that, which some might profit by if they would, but which will be disregarded by all. It is evident that the city of Quebec does not wish to discover a good design together with its author, so much as they desire to secure a set of plans which can be placed in the hands of the City Engineer or some favored local architect to have a building erected therefrom. While they were about it, they should have asked for detail drawings, and thus have placed themselves in possession of all the drawings necessary to the complete erection of the building. As there are three premiums and all the premiated drawings are to become the property of the city, they should have more than sufficient drawings and information for the erection of this most important building. We cannot imagine any sane man undertaking to prepare a design under these instructions, in the hope of receiving any one of the three prizes. The work called for is tremendous, and the first prize, if obtained, would not pay the actual cash outlay of preparing the drawings. If one attempts to compute the cost to the profession of entering such a competition, he would be astounded, more especially if he takes into consideration the reward. The profession should take some concerted action which will result in the complete failure of all such competitions. The instructions state that the cost of the proposed building "shall not exceed the sum of $200,000." This is a very definite statement, and should be strictly adhered to. How it is to be done we know not, for we are convinced that it would require between $400,000 and $500,000 to erect in Toronto a building of the size of this proposed structure, and if the suggestions made in the remarks at the end of the instructions are followed, the building could not be erected for $750,000. Why problems impossible of solution are seriously placed before architects by men who are considered to be capable and of sound mind, we cannot comprehend. We have never known of an architect supplying the deficiency, so the hope that he may do so cannot be put forward as a reason for appropriating only one half or one third of the necessary funds. Granted that the building can be erected for $200,000, the architect who may win the first premium will give value in the form of drawings and specifications to the amount of $5,000, as the plans and specifications asked for are nearly all that would be required for the making up of tenders. If the building should cost $500,000, which it will most certainly, the drawings to be supplied would be worth $12,500. Would any member of the City Council of Quebec agree to sell $12,500 or even $5,000 worth of goods, for $1,500. Certainly not! And yet that is what they think architects are prepared to do, with the additional risk that they may not even receive one cent for their trouble and outlay. If architects had not been too ready in the past to accept terms very nearly as one-sided as the above, the city of Quebec would not have issued such ridiculous and unfair conditions for this competition. The three experts who are to adjudicate on the designs submitted should be named in the instructions. Competitors should know who the experts are to be, as they have often found that where they supposed competent professional men would be selected, incompetent professional men, or men of no professional knowledge whatever, were appointed. The only reason that can be urged why the names of the experts should not be given is, that it might be possible to "fix them." If they should be men that can be "fixed," they will be "fixed" in any case. We believe, however, that they should be men who cannot be "fixed," and such men should be appointed. However, if they are named in the conditions, the competitors can judge of even that side of the question.

No designs should be exhibited to the public before the competition is decided, for two reasons. The experts should be allowed to do their work without bringing pressure to bear upon them. If the public see the designs there will be selections made, and the selected designs will be pressed on the notice of the experts. There is no use having the designs submitted under motto if they are to be exhibited. The public would know at the end of the first day the author of every design, with the possible exception of those from a distance. We believe we can speak for the profession in Ontario in stating that there will be no designs submitted from this province. The conditions of the competition are most unreasonable and unfair, and the amount of work required to prepare the ⅛ scale drawings, specifications, etc., is out of all proportion to the rewards offered.

IT is to be hoped that the Bill respecting the practice of architecture in the province of Ontario will pass the Legislative Assembly. Those who understand the position of the profession of Architecture at the present time, are in sympathy with the proposed Act. There is nothing in it to which any reasonable objection can be taken. The whole object of the Act is, that the qualified practitioner may be distinguished from the unqualified, and that before any man can be registered as a qualified architect he must pass such examinations as may from time to time be determined on as sufficient to ensure his having a fair knowledge of architecture in all its branches. The man who passes this examination will be entitled to use the word "architect" as defining his profession, and will be registered as a properly qualified practitioner of architecture. There is no desire on the part of the profession to make any person about to build obtain a set of plans for the building he proposes to erect if he does not wish to have plans, nor in case he desires plans, to go to a qualified and registered architect. He will be allowed to build with or without plans, and he can go to any man he pleases for his plans; but if he goes to a man not registered as an architect he will only have himself to blame if his building be defective in any particular. It is desired to compel public bodies, entrusted with the expenditure of public funds, to employ a properly qualified and registered architect.

It will be argued that the object of this Act is to make the profession of architecture a close profession, solely to the benefit of its members and not necessarily for the benefit of the public, and that the public does not desire that such a Bill should pass. There is nothing in the Bill constituting the profession of architecture a close profession, but even if there were, we maintain that the public has shown in many ways that none but qualified men should be allowed to practice as architects. The newspapers, as representing the public, are always complaining of defects in buildings, resulting, as they maintain, from the ignorance of architects. Well, if there is this ignorance on the part of some architects, something should be done to weed the ignorant out of the profession and leave only the intelligent, as it would appear that the public is not capable of selecting the competent from the incompetent, or such mistakes would not occur, since there are qualified men, though not in such numbers as the unqualified. Unless there is a standard, the competent man cannot say to the incompetent one that he is not a properly qualified architect, and that he should not claim to be an architect, as he injures the standing of the profession and calls down upon it the condemnation of the public. If he did, he would only be laughed at for his impertinence.

Architects, in submitting this Bill to the Legislative Assembly of Ontario, are only doing the work that the public should perform for itself. In nearly every case where a building has been found to be defective in any particular, the press has laid the blame on the profession as a body. If every case of failure were investigated, it would be found that the mistakes were owing to the engagement of an ignorant man, who had no right by training or natural ability to assume the duties of an architect, as well as to the fact that the public is unable to distinguish between the competent and incompetent. It certainly is not fair to blame a profession as a body for the errors of individuals who have no standing with the profession. These men claim to be of the profession, the public accepts their statements, employs them, finds them incompetent, and forthwith condemns the profession as a body as if there were no competent men in it, but that all were like those men whose statements they are so ready to accept. The Bill of Registration, if passed, will remedy this state of affairs, unsatisfactory alike to the profession and the public. The man who employs a registered architect will have some guarantee that he has a reasonable knowledge of his business, that is, after the Bill has been in force a few years—for as all men now professing to be architects will be entitled to be registered, it will require time for those among them who are incompetent to pass out of sight. If the profession asked the Legislature to pass an Act which would make it unlawful for any but a registered architect to practice architecture, and which would not allow anyone to erect a building except he employed a registered architect, there would be more than ample grounds for the throwing out of the Bill. The profession cannot gain anything from the passing of the Bill except in an indirect way. The men who are now practising will in the course of a few years have to contend with young men who will have had the advantage of a thorough and systematic training. Our best men will feel the competition of these young men, and the inferior men must suffer materially. Yet in spite of such facts, nearly all the architects now practising in this province are united in asking for the passing of this Act.

The practice of law has been made a close profession, because an ignorant or unscrupulous lawyer might ruin his client; medicine has been made a close profession, because the ignorant medical man might kill his patient. These are both good and sufficient reasons for making these close professions. The ignorant architect may cause serious loss to his client through his want of knowledge, or he may even cause his death through not knowing anything of sanitary science or the art of construction. We have therefore the two principal reasons which have caused the practice of law and medicine to be made close professions to urge as grounds for the closing of the profession of architecture against the ignorant and unqualified. It should not be possible for a man knowing nothing of construction to be able to erect a building the fall of which might result in serious loss of life. But such is the case, and that more lives are not lost through bad construction, is difficult for one to understand who has any knowledge of the methods of construction adopted by ignorant architects and builders. There is another class of ignorant architects and builders against whom the public should be protected, viz., the men who, unable to calculate strains, determine to err on the right side, and build much too heavily in places, at the sacrifice of much material and labour, which results in worse than mere waste of the client's money, as all such overplus of material necessitates the strengthening of the work in other parts to carry such unnecessary load.

Some may imagine that this movement for the incorporation of the profession of architecture is local and recent in its char-

acter. Such is not the case. The question has been more or less before the profession for the last twenty-five years, since the Royal Institute of British Architects made a movement toward that end a quarter of a century ago. During the last three or four years the movement in Great Britain has assumed a definite form, and a Bill was submitted to the House of Commons in 1888, which, however, was withdrawn at that time, owing to the opposition of the Royal Institute of British Architects and the Civil Engineers, but submitted again in 1889 in a revised form. There is no doubt but that it will eventually pass. In some of the Australian colonies the matter has been taken in hand, and a Bill to incorporate the architects of these colonies is now under discussion. In the United States, Bills have already been submitted to some of the State Legislatures, and advanced several stages; and in many of the other States Bills are under preparation for submission to the Legislature. It will thus be seen that this movement is not a new or sudden one. It is rather an old one which has slowly gathered force until Acts of Incorporation are now being asked for in all quarters of the world for the proper and equitable acknowledgement of the profession of architecture, in order that the public may be protected from loss of life and money through the ignorance of many supposed qualified practitioners. The membership of the Ontario Association of Architects includes 92 per cent. of all men now practicing architecture in this province, and when those who have applied for admittance to the Association are received, the percentage will be 97. The movement has received the full and hearty support of the medical profession in Great Britain. Medical men are brought into contact with the ill effects of bad building, drainage, etc., and knowing the results, are only too anxious to aid in securing such legislation as will remedy an evil which has caused many deaths, much sickness, and heavy pecuniary losses.

THE ABILITY OF ARCHITECTS TO ESTIMATE.

Editor CANADIAN ARCHITECT AND BUILDER.

IN the last issue of your journal I notice an editorial comment on my letter published in your November edition on the above subject. Apology is made for the publication of the letter, and the reasons assigned are "that all duly qualified architects are capable of approximately estimating the cost of the erection of their designs; that the custom in England as stated is misleading," etc.

In reply I respectfully submit, that every properly qualified architect should be thoroughly competent to estimate the cost of the erection of his designs, and if he is not, he should have it done for him. But just here is where the trouble exists, for it is well known in the profession, both in Canada and elsewhere, that very few, if any, of the very best architects can prepare a systematic bill of quantities. They never learned how to do it, and always consider it unnecessary that they should learn. It is a duty requiring time, skill and practice of quite a different character from designing and preparing plans, and if they are qualified to give a fair estimate of the cost of proposed buildings and feel it their duty to do so, their results prove either inability or neglect of duty.

I am well posted in the routine of architects' offices in Great Britain and Canada, and take exception to the statement that the custom in England as laid down by me is misleading, for the custom I presume is the same in Great Britain now as it was fifteen years ago, at which time it was the general rule or practice for the architect having prepared his plans and specifications, to either retain the services of a professional quantity surveyor, and supply bill of quantities to parties tendering for the work (to be paid for by the successful competitor), or the contractors united in appointing the surveyor, paying him themselves as by agreement made. Some contractors having a preference for a certain surveyor, would possibly engage his services to check the quantities, as at liberty to do but unless the job was a small one, the surveyor was always retained. I never knew that the client was consulted or concerned at all about the quantities, or paying for them. He placed his building in the architect's hands on whom he had reliance as to ability and integrity, and the architect knowing his duty to all parties concerned, supplied quantities to the contractors, the successful one having to pay for them whether he used them or not. On Government work, however, the Board of Ordnance always supplies printed bills of quantities (without charge) to the contractor to estimate on, at so much above, below, or at par on the schedule prices, and which also rules for extra work and advances made on the contract.

As regards the architect or his client's responsibility for the correctness of the quantities, it was always specially agreed upon that the contractor himself was solely responsible.

I have pleasure in replying to Mr. A. T. Timewell's able letter in your last issue on the subject, and coincide with all he has set forth, with the exception of the statement that some architects for their own protection make a practice of taking out the quantities. I don't think they do anything of the kind, for if they are qualified to do so, barring the reputation for giving close preliminary estimates, it entails a deal of time and trouble without any direct recompense. At least they are not obliged to do it, therefore they don't, and all the duly qualified architects know it. The rule of practice should be that a competent party should be engaged to take out the quantities for which he would be paid by the contractor to whom the contract was awarded.

The columns of your journal are certainly the proper medium to discuss this important subject, and the profession should not be too conservative on matters calling for immediate reform.

Yours, &c.,

T SQUARE.

[Our correspondent in his letter of November wrote in the present tense, and now he states that it was of fifteen years ago that he was writing. We hardly know why he should "presume that the custom is the same now as it was fifteen years ago." The custom in regard to quantity surveying is not the same now as it was eight years ago, to say nothing of fifteen. We do know cases in which about eight years ago the architect took out his quantities, had them printed or lithographed, and the successful tenderer paid the printer's bill on the receipt of his first certificate on account of the work he had executed. But the custom now in the best offices is to employ the services of a member of a new profession, namely, a "quantity surveyor," for although quantity surveyors had existed for years previously as a convenience for architects and builders, yet until about seven years ago the necessity for the regular employment of properly qualified surveyors of quantities was not recognized. Quantity surveying is now a separate profession. The employers are usually the architects, not the builders, and the architect includes in his charges, "preparation of quantities," and pays the surveyor's account, his client having already paid him for them.—ED. C. A. & B.]

OUR ILLUSTRATIONS.

COMPETITIVE DESIGN FOR CATHEDRAL OF ST. JOHN THE DIVINE, NEW YORK.—JAMES R. RHIND, ARCHITECT, MONTREAL, QUE.

THE dome is 555 feet from the floor of the church to the base of the cross, and 595 feet from the level of 110th street in front of the building. It would take St. Peter's at Rome inside, as St. Peter's will take St. Paul's, London, and it would be the largest and loftiest dome in the world. The dimensions of the dome are 200 feet inside and 240 feet outside. The height of the front towers from 110th street is 360 feet. The dome is to be on a line with 112th street. The length of the building inside is 400 feet, according to conditions of competition. The height of the nave to the top of the domed ceiling inside is 180 feet. The length of the building outside the portico is 512 feet.

INTERIOR OF ST. MARY'S CATHEDRAL, HAMILTON, ONT.—THOS. CONNOLLY, A. R. C. A., ARCHITECT, TORONTO.

RESIDENCE FOR THOS. MARKS, PORT ARTHUR, ONT.—EDWARDS & WEBSTER, ARCHITECTS, TORONTO.

The students, graduates and faculty of the Toronto School of Practical Science, spent a most pleasant evening together recently on the occasion of their first annual dinner.

QUERIES AND ANSWERS.

WILL you please if time and space will allow answer the following: Two years ago I had the supervision of a house which is built in an exposed position. The chimney to the north has always shown signs of dampness from top to bottom. The flue is used in connection with a small, wood-burning hot water furnace, and is 9 in. by 9 in. inside. Flue was carefully parged inside with lime mortar. From the outside, the chimney seems to be always saturated from top to bottom, that is, of course, when the furnace is burning. An answer would oblige.

ENQUIRER.

ANS.—The discoloration on outside of flue is caused by the condensation of the wood smoke. The wall of flue being probably only 4½ inches thick, absorbs the dampness from the exterior atmosphere or from a driving rain, is always cold and damp in weather cold enough to need artificial heat. The smoke striking this cold brickwork, is condensed, forming the well-known inky fluid, which is often seen dripping from stove pipes when of great length. The burning of green wood would probably aggravate the trouble. A flue on an outside wall should have at least 7 inch thickness on exposed side. An absolute remedy would be to build into the flue 9 inch glazed drain pipes, if special flue pipes are not obtainable. The brickwork could be cut out from the exterior, and pipes inserted if the chimney-breast inside is of sufficient size to allow of it.

TORONTO ARCHITECTURAL SKETCH CLUB.

THE housewarming, held in the new club room on January 28th, passed off in a pleasant and satisfactory manner. The large room was filled with a congenial and enthusiastic gathering, who spent the greater part of the time in the discussion of the drawings and sketches submitted in the first club competition, the subject of which was "An Entrance to a Dwelling House." Mr. Frank Darling, the critic of the evening, filled his position in a highly satisfactory manner, his criticisms and suggestions for improvement amply repaying the competitors for their labour.

By the vote of those present, the order of merit was decided as follows: Senior section—1st, Mr. Ernest Wilby; 2nd, Mr. J. A. Radford; 3rd, Mr. Geo. W. Couton and Mr. A. H. Gregg (equal). Junior section—1st, Mr. Alf. Broadhurst; 2nd, Mr. Cecil Tredger.

The meeting held on February 11th, though having a smaller attendance, was most interesting. Mr. R. W. Gambier-Bousfield's illustrated paper on the "Different Styles of Gothic Architecture" was thoughtfully and carefully prepared, and though by no means lengthy, explained the gradual evolution of the styles in a very lucid manner. The remainder of the evening was devoted to "time sketching." The subject, "A Hall Staircase," was given out, and the members were allowed half an hour to express their ideas.

An announcement of interest to all will be that Mr. Frank Darling has very kindly consented to act as permanent "club critic." This is a position he is admirably qualified to fill, as abundant proof was given at the last club competition.

A number of excellent architectural casts have been loaned the club for sketching purposes by Messrs. Holbrook & Mollington, and will prove an attractive feature.

Mr. J. W. L. Forster, the well known artist, who has taken a very lively interest in the club since its inception, is on the programme for the last meeting of this month, and his paper should be heard by all, as it will undoubtedly be a very interesting one. It is desirable that members should bear in mind that the meetings are held on the second and fourth Tuesday of each month.

"CANADIAN ARCHITECT AND BUILDER" SERIES OF PRIZE COMPETITIONS.

REPORT ON PLUMBING ESSAY COMPETITIONS.

THE essays received in the above competition, four in number, we beg to report as standing in the following order of merit:

1st, "Lucidus in Ordo," placed first, is a clear, concise setting out of the reason and urgency for having such plumbing fixtures as may be necessary in one's home done in the simplest and most effectual way, and going on, shows an accurate knowledge of the practical working of the various plumbing and sanitary appliances, with a critical appreciation of the merits of the many claimants for public favor. Among the points made which are calculated to improve local usage, we would reiterate the following: That concealing work is the cause of bad work; more extensive use of wrought iron; screw pointed pipe; inspection and testing of cast iron pipe at foundries; keeping house drain above basement floors; and that the porcelain urinals are susceptible of much improvement, as by make that would give sufficiancy of standing water with peirodc flush out.

"Aplomb and T Square" may perhaps be bracketed together as showing knowledge of the subject, but failing to treat it as completely as "Lucidus in Ordo."

"Octo" has evidently an exact technical knowledge of plumbing fixtures, but treats the subject almost entirely as an analysis of these in a harrassing manner that can hardly be called essay writing. Having first stated under twenty eight heads the characteristics of the ideal water closet, he gives under numerous heads the points of the four classes of closets now in use, and leaves the conclusion which is the best to our own intelligence and attention. This synopsis occupies two-thirds of the whole. There is very little consideration of the general subject. He concludes with forty one questions about hot water boilers—"just to give an insight to the importance of a boiler." There are no answers given to the questions, which is rather tantalizing. It is to be hoped that "Octo" is open to persuasion to publish the answers to his questions; they would form a valuable paper upon the boiler.

W. A. LANGTON.
JOHN GEMMELL.
R. J. EDWARDS.

SERVICE PANTRY.

Of three drawings submitted, it is difficult to decide as to the first place between "Spero Meliora" and "Art." "Spero Meliora" has made the best drawing, and has the best plan by the extent of making a pass door between the kitchen and the pantry. His details also have a finish which makes the room more pleasing without giving it any unfitting pretentiousness. He has also considered the question of heating. If he had placed his radiator in the corner opposite, and moved the pass door and flap-table by so much further to the left, he would have been able to utilize the lower part of the cupboard now omitted to allow room for the radiator. There would then be more certainty in his favour as against "Art," whose merit is abundance of accommodation. On the other hand "Art" has by his copiousness of closet, rather skimped the sink room, and so detracted from the real comfort of his plan.

On the whole, considering the superiority of his drawing, we feel inclined to give the first place to "Spero Meliora."

"Lilliput" has committed the cardinal fault of having a pass door between the pantry and dining-room. His details are also rather coarse, and his plan not very clear.

W. A. LANGTON.
R. G. EDWARDS.
JOHN GEMMELL.

ENTRANCE AND VESTIBULE DOOR.

The competitors rank in the following order: "Circle," "Dono," "Cimarvac," "Linked Squares," "Ont."

All are alike in indicating no shelter for the door way. It may be supposed to be under a porch or other cover.

The two first are almost equally good. Preference has been given to "Circle" on account of the superiority of his detail The quantity of bracketing and projection of moulding in "Dono's" interior finish is a mistake in taste. "Circle" has not considered his plan in drawing his elevation, but this reflects more upon his accuracy than upon the design. "Cimarvac" is also good—better on the outside than on the inside, which lacks refinement.

W. A. LANGTON.
R. J. EDWARDS.
JOHN GEMMELL.

The names of the successful competitors in the above competitions are as follows: "Lucidus Ordo," (C. H. Acton Bond), Toronto; "T. Square," (H. N. Wilkinson), 24 Chomodey St., Montreal; "Spero Meliora," (Ernest Wilby) Toronto; "Art," (James Walker), Toronto; "Circle," (Thos. R. Johnson), Toronto; "Dono," (Ernest Wilby), Toronto.

STUDENTS' COMPETITIONS.

Editor CANADIAN ARCHITECT AND BUILDER.

SIR,—You published in your November number, conditions for a competition for a bath-room not to exceed 75 square feet. I entered this competition, and was surprised to see that "Birdseye" had been awarded first place for the design of a bath room greatly exceeding that limit in size.

I now see that in the December number of your paper, the clause limiting the size of the room was omitted. As my bath-room was planned before the December number was delivered, and I did not see the change, my design was placed at a considerable disadvantage.

It was surely unfair to amend the conditions within two weeks of the date at which the drawings had to be in, and then to judge a design prepared under the limitations of the first conditions, on the same basis as one that had profited by the change.

My French bath, which is criticised as being "unworthy of a place in a good bath room" would certainly be preferred to a common bath by many, particularly where the space is limited, and had the writer of the report figured the matter up, he would not have said its water-saving faculty was fallacious. The fact is, that the bath I show would take 40 per cent. less water to fill it than one such as "Birdseye" shows, which, if permissible in a 150 foot room, would leave room for little else in a 75 foot room. I assume that the reproduction of "Birdseye's" design is one half the size of the original, because it is mentioned in the conditions that the drawings must be reduced one half, and allowing a slight margin, the reproduction measures one half the size specified in the conditions.

The fact that the pipes may be got at from a bed room closet is another point in my design that is severely criticised. As the pipes should surely be accessible, I conclude the writer of the report would have them boxed out into the bath room itself. I do not see that this would much lessen the evil effects of a leak of sewer gas, and as "Birdseye" makes no such provisions, I do not think his design should be given any preference in this matter, for it is certainly better to place the pipes in a box in the thickness of the partition where they would be accessible, than to place them in the partition without the box, and inaccessible, as "Birdseye" evidently intended them to be.

"Birdseye's" fixtures are arranged without regard to cost in making the plumbing connections. The w. c. is placed in a separate compartment, which is destitute of light and ventilation. The shower-bath is closed round in a way that would make it difficult to turn on the water without getting in the bath-tub. The basin is too small to be used with comfort, and one of "Birdseye's" drawings is "cooked." The door is shown nine inches, and the basin five inches narrower in elevation than on the plan, giving the room a false appearance of symmetry. In competitions of this sort, surely any attempt at "cooking" ought to disqualify a competitor.

I can appreciate the generous motives that induced the committee of the Guild to undertake the difficult task of judging these competitions. Still I think that, having undertaken to make the awards, they should be willing to devote sufficient time to the work to fairly weigh all the merits and demerits of each design. That this was not done in the present case, seems to me evident.

The object of these competitions is to raise the standard of draughtsmen and pupils, and if the criticism of the designs is carefully and justly made, it will be of far more benefit to the competitor than the study necessary to the preparation of the design.

Yours, etc.,

"DADO."

[We were unaware until our attention was called to the fact, that any change had been made in the printed conditions governing this competition. It was found necessary to alter the wording of some of the conditions in order that their meaning might not be ambiguous. It now appears that in making these alterations, the omission of which our correspondent complains accidentally occurred. We can only say that we exceedingly regret the circumstances, and the fact that it is now out of our power to make any reparation for the mistake, unless the judges of the competition should decide that, apart from the objection to the size of the bath, "Dado's" design would have been entitled to first position.—ED. C. A. & B.]

CANADIAN SOCIETY CIVIL ENGINEERS.

THE fourth annual meeting of the above society was held in the city of Montreal on Jan. 22nd. Added interest was given to the occasion by the inauguration of an annual dinner, and the attendance thereat of His Excellency the Governor-General and a number of ladies. The President, Col. Gzowski, presided.

THE PRESIDENT'S ADDRESS.

The president's address, was, as usual, the chief feature of the meeting. Its most important features are reproduced below:

"The progress of the society since its recent organization has been very gratifying. The roll of members, as you will have observed from the report of the council, is as follows:—Honorary members, 7; members, 266; associate members, 100; associates, 66; students, 154; total, 953. The society has every reason to be congratulated upon and take pride in the representatives of engineering talent on her roll of honorary members.

Here followed a reference to a number of engineering works that have attracted attention the past year. First of these was

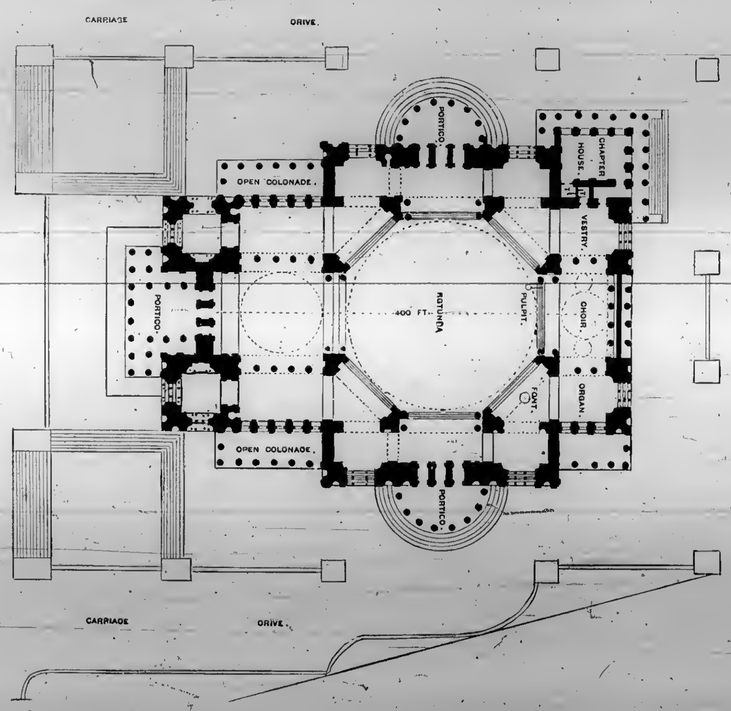
THE ST. CLAIR TUNNEL,

under the Detroit river, to connect the Grand Trunk system in Canada with its connections in the United States at Sarnia. The total length of the tunnel with approaches will be two miles and 1,145 feet. The length from face to face of the portals is 6,000 feet. The depth of open cutting at the east. Canadian side of the tunnel, is 62 feet; at the west, United States end 52 feet. The length of that part which is under water will be 2,310 feet with a gradient to the west, rising one foot in one thousand. The greatest depth of the River St. Clair on the line of the tunnel is forty and one half feet. The minimum thickness of the roof is 16 feet. The bottom of the tunnel is about ten feet above the rock underlying the clay. This has been ascertained by very accurate soundings and borings taken near the line of the tunnel at each 20 feet. It may be well to say that the flow of gas was found immediately above the rock, indicating that its source was in or below that strata, the gas escaping through fissures in the rock. Locating the bottom of the tunnel above the rock and yet securing sufficient thickness of material to support the roof was in order to avoid meeting with gas. The material through which the tunnel is driven is clay, with pockets of wet sand and gravel. The tunnel in cross section is circular with an inside diameter of 19 feet 10 inches. It is a circular tube lined throughout with flanged plates of cast iron, two inches thick, five feet long, bolted together. The ends of these plates are planed to make a close joint, and before being used they are heated and soaked in tar. The lower half of the lining is encased outside in three inches of grout formed of the best Portland cement and coarse sharp sand. Holes are made in the upper part of each plate, through which the grout is poured in. Under the river the whole of the outside of the cast iron lining will be covered this way. In the prosecution of the work, an iron shield is used, under the protection of which the excavation is carried on, and the cast iron lining is put together. The shield is just large enough to enclose the cast iron lining, and as the excavation in front of it is advanced, it is moved forward just far enough to put together one section of the tunnel lining. As the width of these sections or rings is only eighteen inches, and as the rear portion of the shield which encloses the lining overlaps it thirty-nine inches, the forward end of the lining is always within the shield. To ensure safety as far as possible in the event of a sudden strong flow of quicksand or water, an iron diaphragm or bulkhead is built across the shield forty-eight inches from the rear of it, with two sliding doors which can at once be closed. The total length on both sides of the river of the completed tunnel to 22nd January, is 2,006 feet; in Canada, 844 feet; in the United States, 1,162 feet. The time named for the completion of the tunnel is July, 1891.

THE BRIDGE ACROSS THE FRITH OF FORTH.

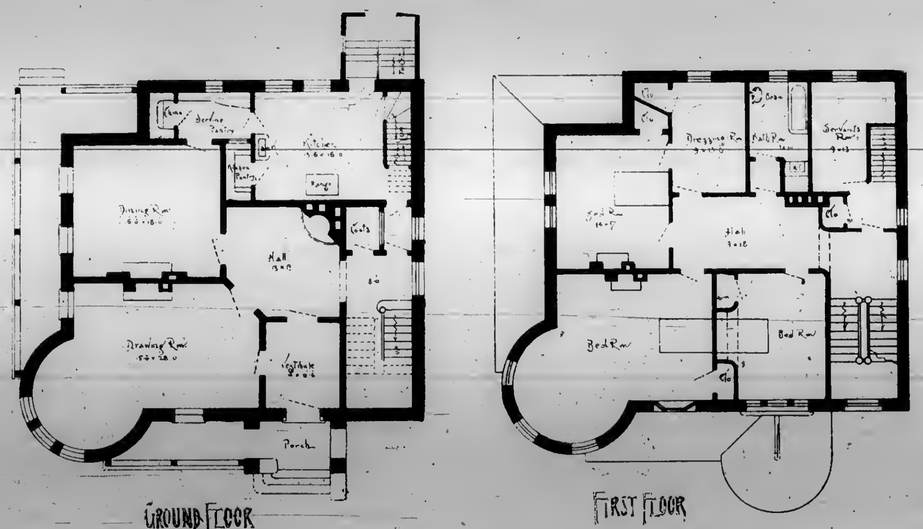
The Frith is five miles wide, and blocks the direct line of the east coast railways. Its construction was long delayed owing to the great width and depth of the Forth. It is not easy to realize how vast is the difference between a bridge with a 1,700 feet span, and the largest span of a railway hitherto constructed. The height of the steel work is also exceptionally great, being equal to that of the golden cross of St. Paul's, 360 feet, while the total height of the bridge is just equal to that of the Great Pyramid, 460 feet. As regards the principle of design, "Cantilever" is a 200 year old term for a "bracket," and the Forth bridge spans are made up of two brackets and a connecting girder. On these brackets there is a horizontal pull of 10,000 tons, and on their bases rests a weight of 100,000 tons. The principle of bracket and girder construction is as old as the hills, as it lends itself particularly to timber construction, which preceded masonry. A wooden bridge built 230 years ago in Thibet, with a span of 182 feet, was the true prototype of the Forth bridge, which only became possible when Bessemer steel was invented. One of the advantages of the cantilever system is facility and safety of erection, as such bridges can be built by commencing at the piers, and adding successive bays of the cantilever right and left until the whole is completed. There is thus no moment when the safety of the whole structure is dependent on the integrity of some temporary staging. The cantilevers or brackets of the Forth bridge are enormously strong. Mr. Baker says that half a dozen ironclads might be hung upon them. The works of the bridge were commenced in 1883. Mr. Arrol, of Glasgow, was the contractor. A start was made with the pier work simultaneously with the erection of shops and machinery for the manufacture of the superstructure. Each main pier consists of a group of four cylindrical masonry piers about 70 feet diameter. These are founded on rock or hard boulder clay at depths ranging up to 90 feet below high water. Six of the cylindrical piers were put in place by the use of compressed air. The piers were floated into position by building them hollow in the first instance and filling them with solid masonry subsequently. The whole was enclosed in a bottom placed about seven feet above the external cylindrical skin, so that a huge diving bell, 70 feet in diameter and 7 feet high, constitutes the bottom of each pier. When in position, the water was driven out of the chambers by forcing in compressed air. Workmen then entered through airlooks, and carried on the excavation 90 feet below the waters of the Forth. The superstructure of this gigantic bridge

INTERIOR OF ST. MARY'S CATHEDRAL, HAMILTON, ONT.
Jos. Connolly, Architect, Toronto.



PLAN FOR CATHEDRAL OF ST. JOHN THE DIVINE, NEW YORK.

S: EAST



GROUND FLOOR FIRST FLOOR

RESIDENCE FOR MR. THOMAS MARKS, PORT ARTHUR, ONT.
Edwards & Webster, Architects, Toronto.

required the manufacture on the spot of 50,000 tons of steel girders and other work. As a rule, the compression members consist of tubes, and the tension members of lattice girders; this arrangement from an architectural point of view proved most effective. The central connecting girder was erected in two halves temporarily connected with the projecting ends of the cantilevers. The bottom members of the two halves at the centre of the 1,700 feet span had large holes bored in them for the insertion of pins to connect the two projecting halves of the bridge, each, of course, 850 feet long. These holes had to be watched so as to seize the right moment when the varying temperature and consequent expansion of the steel brought them opposite each other, so that the pin could be dropped in. The next thing was to release the temporary ties holding the top members of the central girder to the cantilever. These were steel bars, three feet wide and two inches thick; to cut through such section of steel would have taken a long time. Mr. Arrol, contractor, arranged portable oil furnaces by which the ties could be made white hot in a short time, and so the strain on the ties was relieved as effectually as by cutting them. Mr. Baker admits that the cost of the bridge exceeded the estimates. He claims that this was not an exceptionable thing, and says that if such a bridge had to be built again, time and money might both be saved. It is expected that trains will begin to run over the bridge in March next.

Before concluding a reference to this great bridge, I may add that last year a charter was granted for a 2,800 feet span bridge at New York. This year, Messrs. Schneider & Company, of Creusot, in conference with Sir John Fowler and Mr. Baker as consulting engineers, have designed the steel work of a bridge over the English channel, and Messrs. Hersent & Co., of Suez and Panama canal fame, have designed the piers. The total length of the projected bridge is 24 miles, the number of piers 120, the width of the openings from 328 to 1,640 feet, the clear headway for ships 180 feet, the greatest depth of water 180 feet, and the height from the foundations to the top of the steel work 600 feet. It is calculated that a trifle less than a million tons of steel would be required for this stupendous structure. The estimated cost of the bridge is £34,000,000 sterling. The Forth bridge is not only a lasting monument to the designers and constructors, but verifies and most forcibly illustrates the fitness of the motto adopted for the profession of civil engineer:—"Whereby the great services of power in nature are converted, adopted and applied for the use and convenience of man."

ELECTRICAL ENGINEERING.

Electricity as a science and electrical engineering are making very rapid progress to control that wonderful power in nature for the use and convenience of man, which was so graphically described by Mr. Thomas Keefer in his address to the society as "That force like steam, and like it chiefly known by its effects; its range is universal, in the heavens above and the earth beneath, and apparently in all things living, in all animal and vegetable life." As chairman of the commissioners of the Victoria Niagara Park, I am in negotiation for the use of Niagara Falls to generate electricity in sufficient quantity and power to be transmitted to Buffalo, Lockport, Rochester, Hamilton and Toronto, there to be used as a motive power for working stationary engines at a greatly reduced cost per horse power. The project is to drive a tunnel under the falls at a point about 165 feet below the upper level of the river, and at its termination excavate a large chamber for placing water wheels and dynamos, the supply of water to be from pipes leading into the tunnel, with a fall of about 166 feet. That an almost unlimited electric power can be generated by the use of Niagara Falls is not doubted. The transmission of that power to contemplated distances in effective form is maintained by some electrical experts as quite practicable; there are others, again, who place a much shorter limit to the power of transmission. However that may result, there can be no doubt that the science of electricity and its uses are still in a very early stage of development.

RAILWAY DEVELOPMENT.

Canada has now in operation within her borders no less than 13,410 miles of railways representing a capital of $727,180,448. In this vital necessity of rapid locomotion the Dominion, with its five millions of people, is as full and favorably equipped as the States with sixty-five millions. But vast as has been the development of Canada's capacities for meeting the needs of agricultural, mineral and industrial enterprises, and for providing the conveniences of ever enlarging commerce, and of domestic life, the future will see even greater strides made in the material progress of our country. The works that have signalized the past only foreshadow those enlarged opportunities for usefulness and distinction which the future will open up to the civil engineer.

Permit me, in conclusion, to say a few words about our society. The report of the council shows a considerable increase in our numbers. This no doubt is highly satisfactory from my own point of view, not only because of this increase, but as a proof that the society is doing work that is appreciated by engineers, and that the work is good, for were it otherwise they would not have joined us. During the year of my office as your president I have to regret that owing to my residing at so great a distance from the headquarters of the society, and for other reasons beyond my control, I have done but little towards promoting the interests of the society. This failure to do more has been from inability and not from earnest good will towards or interest in the society. Allow me, however to say that any effort of your president alone will not suffice to ensure success. He is powerless unless aided by members. Pardon me if I say that it is the duty of each one of you to help. Each member should bring before the society, every subject of interest connected with our profession of which he has experience in the course of his practice. He ought to attend the meetings for reading and discussion of papers as frequently as possible. You will forgive me for these words of personal advice to every member. Although they come from one who was your nominal head but for the short term of twelve months, he is not wanting in age in other ways, and let me assure you that they are inspired solely by a desire that the transactions and papers selected by the council for discussion should be worthy of the society. They are the proper medium by which the society's usefulness is to be maintained. By the printing and distribution of those papers our work becomes known, and by their merits new members are attracted. Accept the assurance that I will do all in my power to further the interests of the society, and I shall watch its progress with anxious desire to see it prosper.

I cannot sit down without making an allusion to the death of my predecessor in the presidency of the society, Mr. Samuel Keefer, who was my warm personal friend, and the earliest professional colleague I had in Canada. During the period of my service in the Department of Public Works, from 1841 to 1846, Mr. Keefer was my superior officer. I always found his advice sound and most valuable. He was devotedly fond of his profession, to which he did honor. He left important engineering works with which his name will always remain associated. His irreproachable life reached almost four score years, the limit allotted to man, leaving a good example to be followed by all members of our profession."

THE ANNUAL REPORT

shows that during the past year the membership of the Society has been increased by seventy. The honorary members elected were His Excellency the Governor-General, Sir John William Dawson, Sir Charles Augustus Hartley, Sir Frederick Joseph Bramwell, Bart., Sir William Thomson, Sir. John Fowler and Sir John Hawkshaw.

Council again feels it an imperative duty to direct the attention of members to the qualifications required for admission into the several classes. As regards the student class, it is considered that a candidate should be capable of undergoing an examination equivalent to that required for the matriculation into the arts or science department of a university. The qualifications for admission into the classes of members and associate members should be rigidly exacted. Corporate members should make it a rule to verify the accuracy of the statement of the candidate's professional career, and should satisfy themselves that he would prove a fit and proper member of the society. This is especially necessary, as, in many cases, the applicant is personally unknown to the members of council.

During the year 1889, sixteen ordinary meetings were held, and four students' meetings, at all of which appropriate papers were read.

During the past year, the meetings of the society have been held in rooms at McGill College. The council, however, has long considered that the growing requirements of the society, and the need of a library, rendered it desirable that the society should possess rooms of its own. This has now been made possible through the liberality of the president, Colonel Gzowski, and the council has, therefore, secured the lease of the first floor of the new Bank of Montreal building, at the corner of St. Catherine and Mansfield streets, for a term of five years. It is expected that the rooms will be ready by the 1st of May.

The building committee reports the receipt of subscriptions to the amount of $3,323. It is very satisfactory to find that so high an average as $46.20 per subscribing member has been reached. Had all the members contributed in like proportion, the building fund would now amount to $25,000. The president, Colonel Gzowski, has generously given $300 a year, for five years, towards the rental of rooms for the society. (Hear, hear.) But the building committee feels that no time should be lost and no efforts spared in raising the sum required for the purchase of a site and the erection of a building, so as to give a more permanent basis to the society. Messrs. James Ross and R. G. Reed have also given $500 each towards the building fund.

The income for the year, ended on 31st, December, 1889, amounted to $3,629.92, and the general expenditure reached $3,075.95, leaving a balance of $553.97, which, together with the balance of $1,948.92 brought forward from the year 1888, gives a total balance of $2,502 89 to be carried forward.

The report was adopted.

A resolution of condolence with the widow of the late Mr. Samuel Keefer was adopted on motion of the President.

OFFICERS ELECTED.

The following are the officers and council for the ensuing term: President, Colonel Gzowski; Vice-presidents, Messrs. Kennedy, Perley and Hannaford; Treasurer, Mr. Herbert Wallis; Secretary, Professor Bovey; Librarian, Mr. Chadwick; Council, Messrs. St. George, Rittan, Barnett, F. R. F. Brown, Masse, Wragge, Sir Jos. Trutch, Blackwell, Peterson, Munroe, Anderson, Dodwell, G. A. Keefer, Jennings and Ketchum.

A vote of thanks to the President for his valuable efforts on behalf of the society was moved by His Excellency, the Governor-General, and adopted. The business of the meeting closed with the passing of votes of thanks to His Excellency, Mr. Wallis, the Treasurer, Mr. Chadwick, Librarian, and Professor Bovey, the Secretary.

THE ANNUAL DINNER.

The first annual dinner of the society was held at the Windsor hotel. The *menu* was a choice one, and the table decorations of a charming character, while the presence of the ladies gave brilliancy to the scene. Col. Gzowski presided; the vice-chairs being occupied by Mr. E. P. Hannaford, and Mr. P. A. Patterson. The former and Prof. Bovey replied to the toast of "The Engineering Profession."

"CANADIAN ARCHITECT AND BUILDER" SERIES OF PRIZE COMPETITIONS.

THE following is a list of competitions in Architectural subjects which we have decided to hold during the winter.

1st.—Details of the interior of a small house to include those for staircase, doors, architrave, base and windows. Designs to be sent in on or before 1st March, 1890. First prize, $10; second, one year's subscription to C. A. & B.

2nd.—Design with details for four mantels, two of wood, one of brick and one of stone. Designs to be sent in on or before 1st April, 1890. First prize, $5; second, one year's subscription C. A. & B.

3rd.—Three designs with details, for front fence. Designs to be sent in on or before 1st May, 1890. First prize, $5; second, one year's subscription C. A. & B.

4th.—Essay on Heating and Ventilation. Essays to be sent in on or before 1st May, 1890. First prize $10; second one year's subscription to C. A. & B.

The Architectural Guild of Toronto have very kindly appointed a committee from their number to judge the above competitions. We shall publish each report as sent to us by the committee. Draughtsmanship, neatness and clearness of arrangement of drawings will be taken into consideration in awarding positions.

Drawings must be made on sheets of heavy white paper or bristol board

14 x 20 inches in size, and must be drawn to allow of their being reduced to one-half the above size. Drawings must be made in *firm, strong lines*, with pen and *black* ink. No color or brush work will be allowed.

Each drawing must be marked with the *nom de plume* of its author, and the author's name, *nom de plume* and full address, enclosed in sealed envelope, must accompany each drawing sent in.

We reserve the right to publish any design sent in.

Drawings will be returned to their authors within a reasonable time after the committee has given its decision.

FOUNDATIONS.*

IN all purely constructive work, the principal object is to obtain perfect stability with the minimum expenditure of materials and labour. In no part of a building should this object be more diligently sought than in the foundations. Generally covered up out of sight, and in no way entering into the apparent constructional outline of the building, utility is the one great test to be applied. Avoiding on the one hand an inefficient foundation which will imperil the stability of the building, and on the other a prodigal expenditure, where much is wasted that might be fruitfully employed on the superstructure.

To obtain this most desirable mean, it is evident that a careful and scientific investigation into, and adjustment of the relations of three things must be carried out, viz., 1st, the weight and character of the structure; 2nd, the solidity of the foundation bed; 3rd, the width, form and materials of the footings. These three factors are seldom the same in two cases, and it is evident that no mere rule of thumb method or so-called practical experience is a safe guide.

We owe it to our professional standing, as well as to our clients' claims, to give this important branch of construction much careful attention and study. While in this brief paper I may not present anything that is new to many present, I trust it may be the means of directing more of our attention to this important matter.

Before completing the foundation plans of any building, these two questions should always be considered: 1st. What is the weight of each part of the building upon each sq. foot of the foundation? and 2nd, What is the safe sustaining load of each sq. foot of the foundation bed? Not until these are at least approximately answered, can the size, form and material of footings be accurately determined. The weight of a building may vary in different places, and one part require much greater bearing area than other parts.

The foundation bed may not be homogeneous, and may require special treatment to make a solid bearing. Before plans are completed, pits should be dug, or holes bored on the site of proposed building, in order to reveal the nature of the foundation. These should be extended some depth below the proposed bottom level of footings. In ordinary soils, and for ordinary houses, 3 or 4 feet might suffice, while for heavier buildings, or in shifting or light soils, much deeper tests must be made.

Foundation beds may be classified under four heads: 1st, those incompressible under the load; 2nd, those more or less compressible under the load, but not requiring an artificial treatment; 3rd, those requiring artificial treatment to make them capable of sustaining the load; 4th. Those partly of the nature of two or more of the foregoing.

Strictly speaking, rock of good quality and sufficient thickness forms the only incompressible foundation bed. Soft sandstone and shale should be submitted to a test before any very heavy weight is imposed upon them. The best authorities consider that 1/6th of the crushing weight on average samples is the outside limit of the safe load for a rock bed. Sometimes there is a very thin strata of sound rock, with an inefficient foundation below it. If the building be heavy, and there is any cause to suspect such a contingency, test holes should be bored. If the rock be uneven, and the levelling of it likely to incur much expense, a level bed may be formed by filling up the depressions with cement concrete; or if the inequalities be large, by building coursed rubble with full, strong cement joints. Where the bed of rock is on a considerable incline, steps should always be cut to form a horizontal bearing. If the rock be subject to the action of running water, it may be advisable to insert anchor pins of iron to prevent the slipping of footing stones. Where, owing to the dip of the strata, part of the foundation goes lower than the rest, this portion should always be built up to the level of bottom of rest of work with cement, so as to prevent settlement.

Secondly—next to rock, strong gravel may be considered as an excellent foundation, it being almost incompressible under ordinary loads, and not greatly affected by the action of water. The safe load that may be placed on a gravel bed has been variously estimated at from one to two tons per sq. foot. The latter weight should not be approximated unless the bed of gravel is very thick, or there is a good substratum under it. And here it is well to remember that the cohesive power of gravel being so slight, a good deal depends upon the nature of the subsoil. A strata of sand or clay underneath, subject to the action of water, might very materially destroy the sustaining strength of even a deep bed of gravel. More especially should this matter receive consideration if the proposed foundation is so elevated as to be drained by any depression in the neighbourhood.

Sand, when not exposed to the action of water, forms one of the best soil foundations. It is almost incompressible, and its property of diffusing the weight laterally as well as vertically, is a great point in its favor. For this reason it may under favorable circumstances be safely loaded with two tons to the sq. foot. But owing to its fluid nature, foundations built upon it are exposed to many dangers. The action of water will at once destroy its stability, and all sand foundation beds should be protected from its ravages. Sometimes in this very attempt at protection, a new element of danger is introduced. Drains that were intended to protect the foundations from saturation, become easy channels for the escape of the sand by the action of water. The depth of a sand bed and the character of the underlying strata largely determines the safety of such a foundation. Frequently an underlying bed of rock or stiff blue clay forms a table over which flows the surface sinkings of a large area, rendering the bottom portion of the sand bed a moving quick sand. If this is not confined by artificial means, it may at some time move out in the direction of some new outlet, perhaps far removed from the site of the building. Then, of course, a sinkage must follow. On the other hand, if sand is retained in its position, either by natural or artificial surroundings, its semi-fluid property of transmission of pressure, is a great element in its favor.

Stiff clay and marl, or as it is sometimes called, "hard-pan," forms an excellent foundation if kept dry and away from atmospheric influence. It is, of course, slightly compressible, but if the weights be uniformly proportioned, a safe load of from two to four tons per sq. foot can be imposed. The essential element in all clay foundations is thorough drainage, for under the action of water it is soon reduced to plastic mud, with little or no stability. This drainage should be done before or at the time the foundation walls are built, and the trenches always kept dry. Of course in this as in all soil foundations, it is essential that the footings be below the disintegrating effects of frost, and that they be fully protected from its influence while the building is in progress. Owing to its retention of moisture, clay is very subject to the action of frost, and for this reason footings placed upon it require to be deeper below finished ground line than those on sand or gravel. All clays, especially hard blue clay, are very sensitive to the condition of the atmosphere, absorbing moisture in damp weather, and cracking and splitting in dry. For this reason, clay foundations should be exposed as short a time as possible to the action of the air. The expansive force of clay under the action of damp is very great, so that the necessity of protecting it from alternations of wet and dry is very apparent. Foundations on wet clay should not exceed 1½ tons to the sq. ft. unless the uniform weight and isolated position of the walls will admit of considerable sinkage.

Thirdly—on soft, homogeneous soils, or made ground of uniform compressibility, foundation beds may be rendered sufficiently solid for buildings of certain classes by the cheap and simple method of planking. Thick plank or squared logs, proportioned in width and thickness to the weight to be carried, are laid down in at least two thicknesses. The lower layer is placed longitudinally with the wall and the upper one transversely across wall. Three conditions, however, must be present in order to make such a foundation bed a success: 1st, the planking must not be subjected to alternations of wet or dry or to ordinary atmospheric influence, otherwise the wood will soon rot, and a settlement occur; 2nd, the weight of all walls, and the widths of footings under them must be so well proportioned that there will be the same pressure per sq. foot under the whole of planking; 3rd, the building must be so isolated, and of such a character that it may settle uniformly without dislodgement of any part. All timber used in such foundations should be creosoted, or otherwise preserved by some application before being used.

In places where there is a moderately soft foundation, not subject to the action of water, a good foundation bed may be formed by the use of sand pits or sand piling. This method of forming a foundation is to be recommended. There is no chance of decay such as in wood piling or planking, while the distributing property of sand is valuable. In forming the holes to receive sand piles, it is preferable to make them by driving and then removing the wood piles, rather than by boring. The ground around them is much more compacted by such a process, and the lateral transmission of the weight furthered. When the holes have been properly filled and rammed with damp sand, it is necessary to put a bed of concrete or planking over them, so that the sand may not be forced up by the pressure of the surrounding earth. If sand be used in trenches, it is usual to spread it in layers, fully ramming it as the work proceeds, until there is sufficient depth to distribute the weight to be imposed over the whole bottom surface of trench.

In order to secure a good foundation bed that will uniformly distribute the load over a wide area, the most common method is by using concrete beds or footings. The great points in good concrete making are, clean and pure materials, correct proportions, thorough mixing, and quick using. Any concrete which contains less than one-sixth of cement must be considered a poor substratum for any heavy weight. And here it is well to remember, that concrete is really an artificial rock, and that the projection of a course of it beyond the face of the footing stones above it, should not ordinarily be more than half the thickness of the concrete bed. If this important fact be overlooked, it may happen that the projecting edge of the heavily loaded concrete bed will break off, and the area of footing be so reduced as to cause a sinkage.

In silty, peaty or very soft ground, the usual recourse is to timber piling to secure a proper foundation. If there be solid ground underneath that can be reached by a 20 or 24 feet pile, it is generally best to drive them home, so that in reality they become posts resting on the firm ground. Usually it is not well to have a pile exceed 20 times its diameter; for if the soil be somewhat hard it is difficult to properly drive a longer one, while if the ground be very soft, it affords but little lateral support to the pile, and it becomes a stilted pillar. The outside limit of a safe load on a pile resting on solid ground at bottom, is about 1000 lbs. per square inch of area of mean cross section. Where there is no solid substratum to support the piles, they simply depend upon the friction or cohesiveness of the soil to hold them. Usually a pile of this description is considered fully driven when it does not sink more than one-half inch under a 1200 lb. weight falling 20 feet. The maximum safe bearing load of such a pile should not ordinarily be taken as more than 200 lbs. per square inch of area of head. In all cases, piles should be cut off below damp line to prevent decay. It is also very desirable to creosote or otherwise apply a preservative to all piles before they are driven. Where the piles are too far apart to receive directly and centrally the stone footings, heavy timbers should be laid longitudinally on top of them, and the spaces filled in with concrete. Should the semi-fluid nature of the ground be such that ordinary piling will not suffice for a foundation bed, recourse must be had to some special treatment, somewhat in the line of one or more of the following ways: Along both sides of where the wall is to be built, sheet piling is driven in to a sufficient depth (usually not more than from six to ten feet) to retain the semi-fluid soil. If the ground be not too fluid, the soil between the piles may be to some extent compacted by driving in compressing piles. Considerable judgment will have to be exercised as to whether such compacting is possible or not, or the result may be an aggravation of the mucky state of the soil between the sheet piling. In any case, some compact footing must be formed over the soil between the sheet piling, usually by a bed of concrete, sometimes by partial excavation and refilling with layers of sand. Still another method, when the soil is very fluid, is by planking and then filling in with concrete. Sometimes when solid ground may be reached at considerable depth, hollow iron cylinders are sunk, the soil inside removed, and the whole inside built up with rubble or concrete, thus forming solid piers to support the superstructure.

In the case of foundations under water, the usual method is to sink caissons or construct cofter dams, and then remove the water from inside of same until the piers or walls are built. But the further consideration of subaqueous foundations is rather a branch of civil engineering than a simple problem in architectural construction.

Fourthly—the most difficult problem of all is, when the different portions of the same foundation bed are of considerable difference of density. When the soft places are narrow, they may be overcome by arching or lintels. When the soft strata is of limited depth, a series of piers may be sunk to the solid bearing underneath. When the reaching of a solid substratum is not feasible, the only method is, to so proportion the width of footings in the various places in relation to the compressibility of the various soils, that settlement may be uniform. When, however, part of the foundation is on solid rock and the other part on compressible soil, the difficulty is very hard to be overcome. Under such circumstances, if the character of the building will admit of it, the superstructure should be built with a straight independent joint over the point of junction between the rock and soft soil, so that any settlement of the latter may occur without disturbing the rest of the building. In the case of continuous cornices, base courses, etc., allowance can be made in building for the probable settlement. Frequently, however, the style of the building will not admit of this division showing above ground; then recourse will have to be made to two or three expedients: By building the foundation walls up to ground line with ordinary mortar, where over rock, and with cement, where over soft soil, the sinkage of the mortar joints may in some measure counterbalance the sinking of the other part of foundation when the superstructure is imposed. Advantage to a limited extent only can be taken of the flexibility of the walls, by adopting something like the following methods: Form a continuous and solid concrete bed over the soft portion and allow the end of it to rest on the rock. This bed may be stiffened by the use of iron beams bedded in the concrete. The end furthest from the rock must extend considerably beyond the end of wall above, and the foundation be built with a good batter or wide offset, so as to give an extended bearing at that end. In building on such a bed, great care and judgment must be used in raising the work slightly higher at the free end than at the solid rock end, also giving the vertical corner a slight batter inwards, so that when all has settled to its place, the horizontal courses may be found level, and the end perfectly plumb. It is, however, over the point of junction of the rock and concrete foundation, that a crack may be apprehended, and to avoid this, strong wrought iron ties should be built in at short intervals all the way up walls.

Having briefly enumerated the principal kinds and characters of foundation beds, the next point that claims attention is to properly determine their size and relation to the weights to be carried. Here one point needs special emphasis, viz., the centre of the bearing of the foundation bed or footing should be as nearly as possible perpendicular to the centre of the weight carried. If to any extent this be disregarded, and there be any compressibility of the foundation bed, the footings will sink most at the side heaviest loaded, and the superstructure be thrown out of plumb. With buildings in which the walls are of uniform height, and more especially without large openings near the bottom, a uniform continuous wall is evidently the best form of foundation. It distributes the load uniformly over a large area. Where there are piers or large openings near the lower portion of building, it is manifest that a continuous foundation wall would be very unscientific; for where the piers rest, there would be a heavy load, and where the openings are there would be a light one. In such cases, it is best to adopt the principle commonly known as the in-olated pier method of foundations, each part of the building being considered separately and the weight of each section or pier estimated in relation to the footings to support it, so that there may be a uniform pressure over the whole of the foundation beds.

In the majority of buildings there are also the important questions of the different heights of walls, the fact that some carry floors and others do not, and that many walls have a much greater weight resting on some portions than on others. And here it is well to advert to the use and abuse of inverted arches as a means of distributing uniformly the weight of foundations. In scientific hands, and after full and accurate calculation of the thrusts, they are a very serviceable device, but with un-skilful treatment and without consideration of all the facts, they become a source of unexpected trouble and great loss.

An important part, sometimes overlooked, is the consideration of the thrust upon the end piers or abutments and the making of them sufficiently strong to resist all lateral movement. 2nd. It is also important to determine that the thrust is uniformly distributed from the piers in direct ratio to the weight which each pier is to carry. Otherwise one pier with great weight will outthrust one with less weight, the inverted arch be disturbed, and a settlement inevitably occur. 3rd. See that the form of the inverted arch is such that the least lateral thrust is entailed. Usually when the piers are about the same weight, a half elliptic curve with diameters of two to three is best. 4th. See that the arch is solidly built, with every joint fully flushed up and each voussoir receiving its proper share of pressure. A good method is to form a cement centering on the foundation bed, and build the arch upon it.

While my purpose is not to treat of foundation stones or walls, I might conclude by referring briefly to the subject of footings. 1st. As to form, certainly they should always have flat beds and tops, and the stones laid on their natural beds. It is desirable that they extend clear across the wall but where this is not possible, the jointing should approximate, being in the centre. Under no circumstances should the lateral joint of a footing course be near the edge of the wall. The proportion of projection to the height of a footing will vary according to the transverse strength of the material used. With concrete and all artificial stones, the projection should not exceed half the height. With good quality dimension stones, the projection may equal the height. 2nd. As to material, footings should be composed of some material that can stand great pressure and is not adversely affected by alternations of wet and dry. Granite, gneiss and slate stand in the front rank; limestones and marbles are also very good; but some limestones do not stand a great pressure, and their transverse strength is sometimes not very great. Sandstones are of such varying strength, that each sample must be considered on its own merits. Friable sandstones are of little value for such constructional work. Extra hard burned brick may be used where there is not much exposure to alternations of wet and dry. Brick footings should always be laid in cement, and the projection of each course should not be more than one inch, except under light walls.

Finally, to sum up the whole matter, in order that suitable foundations may be provided to our buildings, it is necessary that we carefully consider the weight and form of the superstructure; the character and bearing power of the foundation bed; the form, size and position of the footings, and the character of the materials used.

If in any way this paper shall have directed your attention to a further and deeper study of these important matters, the purpose of its presentation will have been accomplished.

DISCUSSION.

Mr. Bousfield, in moving a vote of thanks, referred to some interesting discoveries which had been made in excavations in Nottingham.

Mr. Gregg seconded the motion, and asked if it was not better when using small stone, not to make the joint run through the centre of the wall, but to lay them alternately so that the joint would surry, so to speak. He thought the best plan was to have the stone go two-thirds through the wall and repeat in the opposite direction. This would make a better wall than one with a regular joint down the centre.

Mr. Gordon said it was an important thing to make allowance for the weights on the piers. When the building was occupied, frequently there would be a great difference.

The Chairman said that in his judgment it was undesirable that there should be a centre joint in the walls.

*Paper read by Mr. H. P. Gordon before the first Annual Convention of the Ontario Association of Architects.

QUEBEC.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

THE municipality of St. Sauveur, the scene of the great fire in May last, has now become part and parcel of the city. It has been divided into two wards, each returning one alderman and two councillors to the city council. Electric light poles have been planted through the new wards, and in a short time our new fellow-citizens will be able to congratulate themselves, with the rest of the Quebecers, on living in the best lighted city in America. A police station and a very fine fire station have been established, and in the early spring, water mains and drainage will be laid through the principal streets of the new wards, a boon alike to them and to the city proper, which has ever been threatened by the fearfully unsanitary state of St. Sauveur under its late government.

Two additional buildings to those named in my November correspondence have been put up on the newly-widened St. John Street, one belonging to the heirs De Blois, and the other to Mr. P. Cote. The former is built of fine cut stone, with trimmings of cast iron; first storey contains two stores with plate glass fronts, with dwellings above. Messrs. Lortie are the contractors; Mr. Peachey, architect. It will cost about $10,000. Mr. Cote's is a very plain structure of red and white brick, and will probably cost about $4,000.

Some new contracts have been let, while most of our architects are at work on plans for buildings to be constructed in spring. Work will be abundant next summer, and high wages will in all likelihood have to be paid.

Our city council, with the wisdom peculiar to all city councils, has resolved upon a very large scheme—no less than the construction of a $200,000 city hall! Architects are invited to send plans in competition, the prizes offered being respectively $1,500, $1,000 and $500 for the three best designs. Very voluminous instructions have been issued for the guidance of competing architects, the whole showing that Mr. Baillairge, our worthy City Engineer, has given a great deal of attention to the study of the details of the proposed new building. The requirements are very distinctly set forth, and foreshadow an immense and costly edifice—one which it is feared will exceed the limit of cost named in the instructions, viz., $200,000. The appropriation is not immoderate were it not that citizens, even with the thermometer at 10° or 15° below zero, and beautiful snow roads, remember the usually filthy state of our streets, and the fact that the corporation is always pleading "no funds," either for street cleaning, or (so far at least as last summer is concerned) for new sidewalks, our wooden ones blossoming forth in green grass, and our stone ones so out of shape and level as to set people wondering how far back in the past century they may date. It is to be noted that the advertisement distinctly says that the architect securing first prize will not necessarily be allowed to secure the larger plum—commission for superintendence. Why, each one may guess for himself.

MONTREAL.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

THE season is yet early to forecast the prospects of building during the coming year, although the late mild weather has had the effect of reminding one that spring is near at hand, and building operations will soon be in full swing. No doubt the coming season will by force of circumstances be a rather busy one if not interfered with by strikes.

Notre Dame street, from McGill to Chaboillez Square, is to be widened to 60 feet, which will cause all the buildings on the south side, with the exception of the Balmoral hotel, to be taken down and rebuilt, besides several on the north side. Some few contracts have already been let for private residences, and others are now being tendered for.

PLASTERERS ON STRIKE.

The dispute between the master plasterers of the city and the journeymen plasterers, which has been pending for about two years, reached a climax yesterday morning when all the journeymen plasterers went on strike. The chief point of dispute is that of wages. Two years ago it was patched up by an agreement between the Master Plasterers' Association and the Plasterers' Union, that $2.50 should be the rate of day's wages, which was continued up to May of this year. The plasterers are now demanding increased wages to take effect after the 1st of May, and they also complain that some bosses violated the agreement by receiving more than two apprentices. On Thursday last the master plasterers were notified that unless they agreed to pay their men $3.00 after the 1st of May next, the journeymen plasterers would go out on strike on Monday morning. A meeting was held on Saturday, and the men were asked to appoint a deputation to meet them. The men worked as usual on Monday, but on Tuesday morning struck.

I learn that the master plasterers have taken legal advice, and although they announce themselves willing to meet the men, are considering the question of proceeding against them if they hold out. Of course the strike has come at a very busy season, and will inconvenience every body engaged in the building business who have contracts on hand to be finished in a specified time. Not only will it affect plasterers, but every other branch of the building trade.

It is now high time that the Government took this matter of the Trades Unions in

hand and declared them illegal, but unfortunately it is difficult to find a Government who have the courage of their own convictions sufficiently to legislate for the good of the country—they prefer to cater to the popular vote. If the plasterers keep on demanding higher wages, the effect will react upon themselves and capitalists will prefer not to build, or the architects will have to consider some substitute for plaster. Another important question which arises is, who is responsible? The contractor says he is free from responsibility of fulfilling his contract in a specified time, owing to an unforeseen strike. If there is no recourse against the strikers, and the builders are not responsible owing to the strike, then the only person who suffers is the proprietor. This seems to me wrong, that a private individual who contracts with a builder for the erection of a house which he is either to occupy himself or has leased to another, is to be at a loss, or inconvenienced, because certain trades want to force the master builders into paying wages for work which is not yet contracted for. Certainly it seems to me that the person building least of all should be the one to suffer loss, and have no doubt in my own mind if a test comes before the courts, the responsibility would fall on proper shoulders.

PERSONALS.

Mr. G. W. King has retired from the firm of King & Gouinlock, architects, Toronto, and has formed a partnership with Mr. A. R. Denison, of the same city.

Much regret has been occasioned by the death since our last issue of Mr. W. J. Boon, one of the most widely known and respected master builders in the city of Toronto.

By the death of Mr. John G. Howard, of Toronto, the architectural profession of Canada has lost another of its pioneers. Mr. Howard was born near London, Eng., in 1803, and in 1832 came to Canada, where for many years he practised his profession with much success. He planned the present St. Lawrence Hall and market buildings, Toronto. In 1834 he gained the premium of £30 for laying out the market block; in 1836 the premium of £45 for the Toronto Gaol and Court House; in 1837 the premium of £45 for the Gaol and Court House, London, Ont.; in 1841 the premium of £25 for the new market at Kingston; in 1842 the premium of £50 for Queen's College, Kingston; in 1844 the premium of £30 for the Lunatic Asylum, Toronto. A few years ago Mr. Howard presented the City of Toronto with the beautiful property known as High Park, reserving for his own use until his death Colbourne Lodge, where he resided, and about 45 acres of land, which property now reverts to the city, together with his magnificent collection of oil and water color paintings.

PUBLICATIONS.

We have received a copy of the second volume of Mr. M. T. Richardson's "Practical Blacksmithing." This volume opens with a brief treatise on the early history of iron and steel. Artistic iron work is next considered, and the tests employed to show the strength of iron are given. The book contains numerous illustrations. Mr. T. Richardson, publisher, New York.

Our English contemporary, the *Builders' Reporter and Engineering Times*, comes to us reduced to a more convenient form, improved typographically, and bearing other marks of increasing prosperity, which we trust it may long enjoy.

The prospectus of the *American Architect* for the present year includes a series of papers on "Ancient Architecture for the Use of Students," by R. W. Gambier-Bousfield, architect, Toronto, Ont. Mr. Bousfield is well fitted to write on this subject, and will no doubt succeed in presenting in condensed form, details of ancient architecture which students would otherwise have to search many volumes through to gain possession of. Such knowledge as is proposed to be given is indispensable to enable students to make intelligent use of the numerous details characteristic of the various styles and periods of architecture.

Wood fiber bath tubs are said to be coming into use, and it is claimed they have the advantage of being movable and readily cleaned, the pipes are easy of access, and they do not, like stone or metal, chill the water and the bather. These tubs are grained on the outside to imitate any desired wood, and inside to look like enamel.

A most enjoyable evening was spent by the Toronto Master Plumbers' Association on the occasion of their annual meeting and supper. The proceedings were presided over by Messrs. W. J. Guy and John Ritchie. The latter in an interesting speech reviewed the city's progress since he first came to reside in it, in 1857. Mr. John Keyser, Secretary of the New York Master Plumbers' Association, was among the invited guests. He remarked in the course of his address that the plumbing done in Canada was superior to that of the United States. The officers elected are: President, W. J. Guy; First Vice-President, D. W. Kinghorn; Second Vice-President, Thos. Cook; Secretary, H. Hogarth; Treasurer, John Ritchie; Sergeant-at-Arms, Caleb Weeks.

A correspondent writes to the *American Engineer* as follows: "We are heating four greenhouses, each 75 x 21 feet, and one potting shed 50 x 20 feet, also one propagating house 50 feet long; using the "over-head and return under-bed" system of piping. We use two 2½-inch steam flow pipes in each house overhead and seven 1-inch return pipes. The boiler is a No. 7 Furman brick-set, and it heats all our houses on from ¼ to 1 pound of steam. The entire heating arrangement works to a charm. The boiler, especially, extracts about all the heat from the coal whether run on a small or a brisk fire. It makes steam on a run, and the effect is instantly felt in the houses. We consider it a complete success and far superior to hot water, by which we warm some of our other houses.

SANITATION AND HEATING

"CANADIAN ARCHITECT AND BUILDER" COMPETITION ESSAY ON "PLUMBING."

By "Lucius Ordo."

One of the most important subjects to be dealt with in connection with modern house planning, is that which comes under the head of plumbing, that having probably more to do with the health and comfort of the inmates after the house is completed than anything else. The introduction of plumbing-work into a house is, broadly speaking, for two reasons: to bring in a good and sufficient supply of pure and wholesome water, and to afford adequate means for its disposal after use, together with human excreta and other waste matters, this refuse being generally comprehended in the term "sewage."

There can be no doubt that the simplest and most direct means possible are the best for accomplishing these objects, and in designing the plumbing system, simplicity and first principles should be continually kept in mind. In order to obtain a full inspection of the work at all times, and to prevent accumulation of filth in dark corners and consequent pollution of the atmosphere, all pipes, etc., should be fully exposed to view, and this, in fact, is the only sure way of securing first-class workmanship, for there are plumbers who, knowing their work will be covered up immediately on completion, care very little about the results if only they can get their job completed. Not so very long ago, a practical illustration of this came to notice, and that too in a house where all fixtures were exposed. In the main part of the building, the work was so well done as to attract particular attention; the joints of both lead and iron pipes were everything that could be desired, and the bends of full bore throughout were so well done and symmetrically arranged, as to be an ornament rather than an eyesore to the rooms in which they were placed; but in peering about the cellar, a lead waste pipe was discovered, partly hidden by the ground floor joists, in which the bore at the two bends in it was decreased fully one third, thus forming a serious means of obstruction. This only shows that where there is the slightest chance of the work being hidden, it is apt to be negligently carried out. The main pipes should be arranged so as to pass down in inferior rooms or closets, or else in chases specially prepared for them, the last mentioned way being least commendable, as in some cases it gives a pretext for careless jointing. If objection is made to the pipes being exposed, they could be covered with wood panelling, but this should only be screwed together to allow of easy access to the pipes. All fittings should be as little encased from view as possible; in fact, only the barest requirements in the way of casing should be conceded to. There is no earthly reason why every fitting should be shut out from sight as the custom has been for so long. If the work is well done, it is far from being an eyesore, and in the better rooms and more public places, the fittings could either be made entirely of brass, or else nickel-plated; and if safes are deemed necessary, they can be of marble, although the necessity for safes when all the fixtures are exposed is not quite apparent, for a leakage could not remain unnoticed long enough to do any damage, and in this case a superfluous appendage of the plumbing system might be done away with. This principle will be found to work best all through, for the simpler and less complicated the whole thing is, not only will it be less liable to get out of order and require frequent attention, but the cheaper it will be in the first place. Of course it is not to be understood that cheapness is to be of primary importance. By no means. Let enough money be spent to secure a thorough job. There must be no stint in that, but superfluities ought to be avoided. The amount of cold metal which goes into a house now, bears an alarming proportion to the cost of the whole building, and certainly economy in this respect ought to be regarded as much as possible.

There can be no question that metal pipes only should be used inside a building. The unreliability of cement joints in earthenware piping, and the danger arising from the pipes themselves being so easily broken, ought to preclude their employment in that connection altogether. The defects of other systems of house drains that have been made use of are so glaringly apparent, it is not necessary to mention them. On the whole, iron is more suitable for soil pipes than lead, at any rate in this country. In England where the wastes from baths and basins are not emptied into the soil pipe, and where the pipe itself is always outside the house, no doubt lead pipe may be suitable; from the universal use of it in that country one would gather that it is; but in this climate it is necessary to have the soil pipe not only inside the house to prevent it being choked up by freezing, but if possible against an inside wall, and the superiority of iron in a case like this can at once be appreciated. It is not only lighter and stiffer, but less liable to injury, such as by nails being driven through it, etc. These are important points inside a house, and then, with all wastes running into it, a lead pipe would soon be deteriorated by the action of hot water from baths; etc. Taking all this into consideration, with the fact that iron requires the least means of support, there is no hesitancy in claiming that it is the most suitable material. It can be cast into almost any shape, and in fact, the patterns usually kept in stock will meet any ordinary requirements. For the smaller branch wastes, etc., lead pipe, which is more easily manipulated, is generally used; and for these purposes is doubtless the best.

As a rule, *cast* iron is used both for soil pipes and house drains, and no doubt is very efficient; but for the upright pipes, wrought iron with screw joints, which is now being extensively used, is probably better, for where there is apt to be any pulling strain, occasioned by settlement or otherwise, the lead joints of cast iron pipes soon give way, and allow sewer gas to permeate the house. Then again, the heavy bells have rather an ugly appearance when exposed to view, and take up a great deal of room. Wrought iron pipe is also made in much longer lengths than cast iron, thus necessitating fewer joints.

When cast iron is used, it should be of extra heavy quality, and the hubs should be strong enough to allow a good caulked joint to be made, as these are the only joints ordinarily used which can be relied upon at all. It should be straight and perfectly smooth inside, and to insure against all flaws and defects, should be thoroughly tested by hydraulic pressure before being coated by coal-tar, which is done to prevent corrosion. As the efficiency of the pipe system depends largely on the joints, great care should be taken to see that these are all well executed.

The pipes should be placed within one another in as straight a line as possible, and a gasket of oakum well rammed into the hub between the two pipes to prevent the lead from entering the joint and forming an obstruction. Although some consider it better to pour in the molten lead in two separate portions to allow of better caulking, it seems preferable that it should be poured in one continuous flow, as the joint will then be more homogeneous. When the metal is cold and has contracted, it should be well caulked. This is a very important operation, and should be insisted on to secure a thorough tight joint.

As before stated, the superiority of wrought iron pipe is chiefly due to the better method of jointing, which this material allows of. The screw thread is usually slightly tapering, and to make up for any flaws which may be in the thread, a mixture of white lead, linseed oil and red lead is used in making the joints, which hardens in a short time, and makes a perfectly tight connection. Wrought iron pipe needs to be protected against rust and corrosion, and for this purpose is usually dipped into hot asphalt after having first been heated.

The best way of connecting the lead pipes, is by means of wiped joints, and care should be taken in making these that there is no burr left in the pipe after being shaved, which might form an obstruction—also to see that the inner pipe is not contracted at all by the outer pipe being insufficiently opened. These joints, when well finished, should present a rotund symmetrical appearance.

The usual way of joining lead pipes to cast iron, is by using a brass ferrule connected to the lead pipe by a wiped joint, and caulked into the iron pipe with oakum and lead. When wrought iron pipe is used, connection is made by means of a screw joint.

It has been a very common mistake in the past to use soil pipes of too large a diameter. This is almost as bad as having them too small. It is impossible for 5" and 6" pipes to be properly flushed by the usual amount of water sent down them. As a matter of fact, a 4" diameter is quite sufficient to prevent any obstruction, and this size allows a good flushing of the pipe. A 3" pipe could even be used where there is only one water closet.

It is preferable that the house drain, instead of being buried from sight, should run fully exposed along a cellar wall, or else suspended from the ceiling. This method, besides allowing the drain to be fully inspected at all times, admits of a proper fall being given it, which is sometimes hard to do when buried. If there are fixtures in the cellar, however, this is impracticable, and the drain must run below the floor. When this is the case, and it is not placed in a trench to be accessible throughout, it should at least have cleaning hand holes at all junctions, near bends, etc. No junction should be made at right angles, Y branches only being used, and thus facilitating the flow as much as possible.

The system of pipes should be thoroughly ventilated. Even if gas from the sewer is prevented from coming into them, the air is always foul from use of the fixtures and filthy matter which to a certain extent coats their insides. For this reason the soil pipe, which should always be carried up in as straight a line as possible, should be extended at least full size up through the roof, and there left perfectly open. Ventilating hoods are no use on a soil pipe, and only impede the flow of air. This extension should be kept well out of the way of dormer windows, skylights, chimneys, etc. To secure a constant circulation of fresh air through the pipes, an inlet should be provided at the lowest point of the system, wherever there is no danger of freezing the water in the traps. In some localities the fresh air inlet has had to be dispensed with on this account, but all the same, where it is practicable it is better. The upward flow of air in soil and waste pipes is greatly helped if they can be arranged near a heated flue.

With any amount of ventilation, however, the system would still be imperfect if there were nothing to prevent sewer gas entering the house at the fixtures. To effect this, some barrier is necessary which will not impede the flow of waste matter, and at the same time will prevent the return of any foul air. The most efficient way of obtaining this is with a seal of water, which is gained in the simplest manner by a bend or dip in the pipe.

There should be a trap under every fixture, and that as near as practicable to the outlet, to prevent gases rising from the sewer to the soil and waste pipes. A trap should also be placed on the house drain between the fresh air pipe and the sewer. This trap should be provided with a cleaning hand hole as indeed should all the traps and when outside the house, should be accessible by means of a man-hole. Some sanitarians condemn the use of a trap in this position altogether, claiming that the soil pipe might be made use of to help ventilate the public sewer, but it hardly seems right to accomplish this by using the pipes in private buildings. To be secure against the danger of diseases being carried from house to house through the drain, perfect isolation from the sewer ought to be insisted on, and this can only be accomplished by trapping the house drain.

Traps in themselves are evils, as tending to impede the flow of water and sewage, but being absolutely necessary, the only thing which can be done is to use the best form which has been devised. The fundamental principle of all traps is, that they shall allow of the whole water in them being entirely changed every time they are flushed. Round pipe traps have been found by experience to be the best for this reason, and the forms most commonly used are the S, P, running traps. There is, however, a great danger of these traps under certain conditions losing their seal by siphonage, and also with being forced out by air pressure. To overcome these difficulties, almost every conceivable form of trap which could be devised has been made use of, but it has been found that those which are most efficient in this way are not self-cleansing. It was chiefly on account of its non-siphoning qualities that the filthy D trap was used for so long, but the objections against such a form of trap are so numerous as to preclude its use altogether in any place where the work is carried out on sanitary principles.

It is hardly necessary to describe the great number of traps now in use, for although many of them are very efficient for some purposes, there is none which can be so safely used for general requirements as the S trap, if properly protected against siphonage and back pressure. Siphonage takes place when atmospheric pressure is greater on one side of the trap than the other, and this is caused by a partial vacuum being created by the disturbance of air which takes place when a discharge is being sent through the soil pipe. To prevent this vacuum, and to render the trap safe against back pressure, a vent pipe is carried from the crown of the trap, connecting with the outside air. This also helps to perfect the system in another way, by completing the thorough ventilation of it, and thus preventing an accumulation of foul air in any of the pipes. Objections have been made against this method that it greatly complicates the plumbing apparatus, and at the same time increases the evaporation of water in the traps, but from recent experiments made by Mr. Glenn Brown at the Museum of Hygiene, U. S. Navy Department, it has been shown that evaporation is hardly increased at all by using the air pipe. Against the other objection no stand can be taken; it does complicate matters, but until the ideal trap has been evolved, that is, one which with a sufficient seal will be self-cleansing and non-siphoning, this is the only system which can be safely employed.

The vent pipes should in all cases be large enough to prevent frictional resistance to air passing through them, and in very high buildings the diameter will have to be increased in proportion to the length of pipe. It is not necessary to carry a separate vent pipe through the roof from each fixture; a main pipe can be taken from the lowest fixture and branched into the soil pipe above the highest, all other vents being connected with this one.

The fixtures themselves should be of the simplest possible character, and as far as practicable should be arranged in groups vertically above one another. All rooms containing these fixtures should be well lighted and ventilated, and not, as is often the case, be relegated to the most remote and unventilated corner of the building.

There are two classes of water closets made use of: those with movable parts, such as the pan closet, the valve closet, and the plunger closet; and those without movable parts, such as hopper and wash-out closets. Those not having movable parts are the only ones which should be used, the other class being liable to quickly get out of order and soon fouled.

Hopper and wash-out closets are flushed through means of a flushing rim, which is supplied by water from a flushing tank fixed at a suitable height above the bowl. The efficiency of these closets depends on the water flush to a very great extent. The best material for all fixtures of this kind is that which presents a smooth and non-absorbent surface, and for this reason, glazed earthenware is chiefly used.

Where urinals are employed, which should never be in private houses, they should be automatically flushed, and the basin should be shaped so as to hold a certain amount of water. This insures less pollution of the atmosphere, as the urine is diluted at once.

Kitchen sinks are preferable if made of earthenware, which has many advantages over the materials ordinarily employed for this purpose. Their outlet should always be protected by a strainer to prevent obstruction of the pipes, and a vented S trap should be used in preference to most other traps. The bell trap should not be employed under any consideration. The "Sanitas" flush pot seems to be an excellent arrangement, and if employed would save the expense of back venting.

To get rid of the hidden overflow pipe in baths, basins, etc., which is apt to become foul and cause an annoyance, many different arrangements have been tried, but the most satisfactory of all is that in which a standing overflow is inserted into the socket of the waste pipe, thus doing away with the use of the dirty plug and chain at the same time. To prevent this outlet being in the way when the fixture is being used, a recess for it to stand in should be formed.

The baths most generally in use are of tinned and planished copper, but as these require to be cased in, they are not as satisfactory as they ought to be. Enamelled iron or porcelain seem to be preferable materials, as these would allow them to be fully exposed.

It is hardly necessary to speak in detail of all the other fittings which are now used, but let it be sufficient to say that in choosing them, cleanliness and simplicity should be the first consideration. When safes are used, the drip pipe should on no account be connected to any waste or soil pipe, but should be made to discharge over the cellar or kitchen sink.

The water is usually brought into and circulated through a building by lead pipes. This has been condemned by some authorities, as lead poisoning may take place when the water contains certain acids, but brass and iron pipes have been recommended instead. Care should be taken to locate these supply pipes in such a way that they will not be liable to freeze.

All pipes should be graded to a point in the cellar, and provided with a stop and waste cock to allow of them being entirely drained when necessary.

It has been impossible here to enter fully into all details of the plumbing system, but a general survey has been given, and the most essential points touched upon. This is probably quite sufficient, for if the principles are understood, there ought to be no trouble in applying them to details.

MANUFACTURES AND MATERIALS

BURSTING PRESSURE OF LEAD PIPE.

The following tables are taken from Rivington's "Notes on Building Construction":

Internal Diameter.	Lead Pipe. Thickness.	Weight per foot.	Bursting pressure in pounds per square inch.	Lead Encased Tin Pipe. Thickness.	Weight per ton.	Bursting pressure in pounds per square inch.
½	.2	2.3	1579	.14	1.3	1859
⅝	.2	2.6	1349	.13	1.4	1454
¾	.22	2.8	1191	.15	1.9	1416
1	.2	4.1	911	.14	2.4	1265
1¼	.21	5.3	683	.13	2.7	835
1½	.24	7.1	734	.15	3.8	849
2	.21	9.2	498	.17	5.4	642

Deputations have waited on the government for and against a change in the tariff on wall paper.

The window glass manufacturers' association of the United States has advanced prices five per cent.

The Napanee Cement Works lately received an order for 1,500 barrels of their cement for the new Board of Trade buildings in Toronto.

The report comes from Winnipeg that the brick dealers have cornered the market, and that when the building season opens there will be a great shortage.

Messrs. McArthur Bros. of Belleville, Ont., contractors for the Grand Trunk double track, have opened a limestone quarry at Crookston, where they will employ 75 men and ship ten cars of stone per day.

CONTRACTS

CONTRACTS OPEN.

YARMOUTH, N. S.—$50,000 will be spent in street improvements.

CHATHAM, ONT.—A new Presbyterian Church is to be built here.

ELGIN, ONT.—A movement is on foot to erect a Methodist Church.

AVONBANK, ONT.—It has been decided to erect a new church this year.

BURLINGTON BEACH, ONT.—John McNeil will erect a summer hotel at once.

GUELPH, ONT.—A movement is on foot for the erection of a new drill shed.

WINGHAM, ONT.—It is the intention to erect a new Episcopal Church here.

ROCK ISLAND, QUE.—Messrs. Butterfield & Co., will build a machine shop.

SEAFORTH, ONT.—Mr. James Livingstone, of Baden, Ont., will erect a flax mill.

MORDEN, MAN.—A site has been secured for a new Methodist church to cost $4,000.

LACHUTE, QUE.—The Government is asked to erect a new post office building here.

AILSA CRAIG, ONT.—The Presbyterians are contemplating the erection of a manse to cost about $2,500.

FOREST, ONT.—The Presbyterians are looking for a suitable site on which to erect a new church next summer.

BEAUPORT, QUE.—A new Roman Catholic church to replace the one recently destroyed by fire, will be erected here.

WINDSOR MILLS, QUE.—A large Roman Catholic Church and school are to be erected here during the present year.

NEW WESTMINSTER, B. C.—It is proposed to erect a large three storey block on the corner of Columbia and Mary streets.

DENFIELD, ONT.—The plans prepared by Mr. John M. Moore of London, for the new Baptist Church here, have been accepted.

KINGSVILLE, ONT.—Messrs. Hiram Walker & Sons have purchased a piece of property near here, and will erect another large hotel.

PARIS, ONT.—A deputation will wait on the Ottawa Government to show the need of a new post office and customs house. A free site will be offered by the town.

LEAMINGTON, ONT.—The Oddfellows are talking about purchasing property and building thereon a three storey building, to comprise stores, lodgeroom and opera house.

BOWMANVILLE, ONT.—Mr. W. Bunney, architect, is preparing plans for the rebuilding and enlargement of the United Methodist Church in this town. The estimated cost of the proposed change is $12,000.

PETERBORO', ONT.—The Council has agreed to grant $2,000 towards the erection of an armory for the 57th battalion, on the condition that the county grants $1,000 and the Dominion Government $3,000 towards the project.

WINNIPEG, MAN.—The Mayor urges the necessity for the adoption of some scheme for the extension of the water-works system.—It has been decided to erect a suitable monument to the memory of the late Hon. John Norquay.—The Government will be asked to enlarge the Court House.

WEST TORONTO JUNCTION.—The Mayor suggests the propriety at an early date of extending the present conduit 2,000 feet further into the lake, thus securing purer and better water. He also suggests the advisability of employing experts to report on the best system of sewerage to accommodate 50,000 inhabitants.

BRANTFORD, ONT.—Two new Methodist Mission Churches will be built this year, one in Eagle place, and one on Terrace Hill.—Mr. Chipman C. E., has presented his report on the subject of sewage disposal. He recommends the immediate construction of a main sewer which will empty into the Grand river near the Mohawk church, at an estimated cost of $33,009.

KINGSTON, ONT.—The erection of a building for the Women's Medical College has been decided upon.—The Y. M. C. A. has purchased a site for a new building which will be erected as soon as funds shall have been subscribed.—Plans are being prepared for a summer hotel and club house to be erected next summer on Horse Shoe Island, by a joint stock company.

BROCKVILLE, ONT.—Application has been made to Parliament to incorporate the Thousand Islands Bridge Co., to build a bridge across the St. Lawrence River near this place.—Tenders are asked for by Geo. A. Allan, architect, for a brick and frame residence for Mr. A. S. Ault, probable cost, $6,000.—The School Board are considering plans for a four room school building for the west ward.—The Separate School Board propose erecting a school building on Pine St.

QUEBEC.—Several prominent gentlemen are said to be pushing forward the project of erecting a palace hotel on the site of the old Parliament House grand battery, overlooking the St. Lawrence.—The estimates of the local government for public works and buildings amount to $949,876. Of this sum it is proposed to expend $50,000 on colonization roads, and $10,000 in macadamizing country roads.—A new R. C. Church to cost half a million dollars, is to be built in St. Roch's ward; also a convent for young ladies.

LONDON, ONT.—A resolution has been adopted in favor of building a trunk sewer.—A number of new cottages are to be erected on the hospital grounds for the accommodation of persons afflicted with contagious diseases.—The Plympton Methodists are arranging for the erection of a new church.—At the meeting of representatives of Middlesex, Kent and Elgin Counties held here on the 5th inst., it was decided to call for tenders for an iron and stone bridge at Bothwell, with 220 feet span and 16 feet roadway. The bridge will cost, it is estimated, about $25,000.

HAMILTON, ONT.—Mr. P. B. Griffith has purchased a site at the corner of James and Herkimer Streets upon which he will erect a residence.—A committee of the Separate School Board recommends the erection at once of a new school, fronting on Sheaffe and Mulberry streets, and that Mr. R. Clohecy be appointed architect for the same.—The plans for the Bell Telephone Company's new offices on Hughson street have been approved by the head office, and the work will be commenced as soon as possible.—B. E. Charlton, J. Bruce, J. J. Stuart, M. Young and A. Bruce, all of Hamilton, are petitioning the Dominion Parliament for incorporation as the Hamilton Junction Railway Company, for the purpose of constructing a railway and erecting a central passenger station in Hamilton.

MONTREAL, QUE.—Plans have been prepared and a considerable amount of money subscribed towards the erection of a Masonic Temple, to cost from $100,000 to $150,000.—Ste. Cunegonde has decided to erect a new town hall in the spring.—Sealed tenders will be received until Feb. 18 for furnishing 1,000 tons of cast-iron water pipe, to be delivered in quantities and at dates stated in specifications. Address, B. D. McConnell, Superintendent.—The Government of the Province of Quebec propose to

COMPETITION DESIGN FOR CATHEDRAL OF ST. JOHN THE DIVINE, NEW YORK.

CANADIAN ARCHITECT AND BUILDER

FINE AND INDUSTRIAL ARTS · DECORATION · FURNISHING
CONSTRUCTION · SANITATION · ENGINEERING

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EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The Ontario Association of Architects has appointed the "Canadian Architect and Builder" its official paper.

The publisher of the "The Canadian Architect and Builder" desires to ensure the regular and prompt delivery of this Journal to every subscriber, and requests that any cause of complaint in this particular be reported at once to the office of publication. Subscribers who may change their address should also give prompt notice of same, and in doing so, should give both the old and new address.

THE Quebec Legislature has very properly refused to grant the extensive powers asked for by the Montreal Subway Co., commented on in a previous issue. The measure was only defeated, however, by the casting vote of the Chairman of the Railway Committee.

THE destruction of the University is said to have induced the thought in the minds of the aldermen that it would probably be following the dictates of wisdom and economy to expend an additional $200,000 in fire-proofing the new Toronto municipal buildings. The architect is understood to be favorable to the proposal, which could be carried out, if decided upon at once, without either change of plans or delay.

THE cost of maintaining Rideau Hall, the residence of the Governor-General, was recently the subject of Parliamentary enquiry. One of the persons called to give evidence created considerable amusement by reading a list of the heating apparatus required to heat the 265 rooms and corridors of the establishment. This included eight hot air furnaces, four beehive furnaces, two coal furnaces, fifteen base-burning stoves, fifteen box stoves, twenty-three open grate stoves, thirty-eight fire-places, three cooking ranges, two bake ovens altogether 121 heating apparatuses for the main building, Secretary's cottage, stable and greenhouse. In reply to the enquiry "Do you manage to keep warm?" the witness replied, "Not very."

IT is satisfactory to observe that Mr. Jennings, the new City Engineer of Toronto, is to be clothed with larger powers than those accorded to his predecessor. It is only by conferring upon him full authority to manage his department in the way that seems to him best calculated to produce satisfactory results, that he can be held accountable for the efficiency of the work performed. There is evidence of indisposition on the part of some of the aldermen to surrender the reins of authority entirely into his hands, but he very properly says, in the light of the experience of the past, that unless this is done, he will have no other alternative than to step down and out. Under these circumstances the authority asked for will be granted, and the results may be expected to show a very distinct improvement over the system which has hitherto prevailed.

THE destruction of the University of Toronto, is felt to be a national calamity. Canadian architecture has lost one of its brightest ornaments, and Canadian architects an object of delight and inspiration. The structure was Norman in outline, but Roman in detail, and was erected in 1860 from designs prepared by Messrs. Cumberland & Storm. It was universally acknowledged to be one of the finest specimens of architecture on this continent. Fortunately the main tower and facade escaped destruction, and thus in rebuilding, the former outlines will to a large extent be preserved. Changes will, however, be made in the plan to better adapt it to the requirements, and increased accommodation will also be provided. The Legislature, the city of Toronto and the graduates, will give liberal assistance towards the immediate re-building of the structure. It is a subject of much regret that many treasures belonging to the library and the museum can never be replaced. We cannot but feel that the carelessness or penuriousness by which the University Senate was led to neglect to make proper provision for the protection of the noble building and its priceless contents is deserving of the severest censure.

WORKMEN in the building trades in Montreal and other cities are demanding shorter hours of labor. An intimation accompanies the demand that no reduction must be made in the rate of wages—in short, that a long day's pay shall accompany a short day's work. The Montreal master builders are asked to meet a deputation of workingmen and hear reasons for the demand. It will be interesting to learn whether any reason exists other than the desire to do the least amount of service for the greatest amount of money. The profits of the master builders are not so great that they can afford to do with six hours less work per week by every man in their employ while maintaining the present rate of wages. As stated elsewhere, the demand must lead to the adoption of the system of payment by the hour. This course, we observe, has just been decided upon by the Ottawa builders. The only alternative would be to add the amount which would be lost by lessening the hours of labor, to the tenders, thus throwing the burden upon the shoulders of persons who should build. In view of the keenness of competition which exists among contractors, there is little hope that this can be done.

It has frequently been remarked that "corporations have no souls." Unless it desires to be classified in this category, the Court House Committee of the Toronto City Council should at once recede from the position it has taken with regard to the appointment of a clerk of the works for the new city buildings, and the source from whence should come his remuneration. Out of fees amounting to but 3½ per cent. on the cost of the building, the committee contend that the architect should himself pay for the services of a clerk of the works. This the architect very properly refuses to do, and would be justified in refusing to do, even though he were to receive the full commission of 5 per cent. usually paid to the profession. It would be contrary to all precedent that he should do so. There is a vast amount of ignorance even on the part of intelligent people regarding the position and duties of the architect, and the treatment which should be accorded him. We trust that the Incorporation Bill now before the Legislature, when it becomes law and goes into operation, will serve to project light upon this subject.

THE Building Inspector in England, or rather the "Building Surveyor" as he is called there, is a more important functionary than our local inspectors; he has to pass a special examination to prove his qualifications for the post, and is usually by profession an architect. But it sometimes happens that with all the care taken, the wrong man gets the post, and an amusing story comes to us from England in this connection. A newly appointed surveyor, anxious to show that he was thoroughly alert and up to his duties, reported that a stone pier had been erected in a shop front to support the upper part of the house, and that it was 3 inches out of the perpendicular. Now 3 inches in about 12 feet would be a considerable slope. It was discovered, however, that he had "sighted the stone pier by a scaffold pole." Prodding about with his stick he came to the conclusion that the pier had not a solid foundation, when as a matter of fact it stood upon the basement wall. Says he to the contractor: "Something wrong here, I'm afraid." "Oh!" says the contractor, "would you like to know where you put your stick? Well, that's where the coal hole plate will come, and you won't find a bottom at 8 feet there."

OCCASIONALLY the architect comes in contact with a contractor who for "ways that are dark and tricks that are vain," resembles the "heathen Chinee." It is related that a well-known member of the old school of Toronto architects once proved himself more than a match for a contractor of the class to which we have referred. The contractor was engaged in the erection of a large building under the architect's supervision. The latter, while paying a visit of inspection one morning observed a pile of soft bricks, and having called the contractor's attention to them, told him that they must not be allowed to go into the building. The contractor professed surprise that such inferior material should have been delivered to him, and declared that he would have the manufacturer cart them back to the yard again. The architect said no more, but went and stationed himself at the upper window of an empty warehouse near by, from which he could command a view of the operations of the contractor and his employees. He saw the pile of soft bricks gradually disappear and take its place in the construction of an inner wall. The operation occupied a large portion of the day, but he remained patiently at his post until it was finished. Then he went to the contractor and told him in somewhat forcible language what he had seen, and ordered him to set to work and undo what he had done and build the wall of proper material.

IT is with pleasure that we direct attention to the work of the Toronto Architectural Sketch Club, for we feel that in no way can we more surely advance the interests of the profession than by exciting a desire for organization amongst its members, and we hope that before long reports may be sent us of the formation and operation of similar societies in other cities throughout the Dominion. Enthusiasm is one of the elements of success in every trade, business and profession, and is an absolute essential in a successful architect's life. Nothing but enthusiasm will prompt him to spend long nights over dusty tomes and troublesome problems, and all the studies so necessary to his education. Nothing else will lead him to spend years in perfecting himself in draughtsmanship and in art-knowledge, and again his enthusiasm is unquestionable when the great longing of his life is gratified, and he roams at will amid the great and beautiful buildings of the world—when he gathers his sketches and collects his precious photographs—causing his mind to become fired with an ambition to emulate, if not to excel, those old builders whose works have been the inspiration of all future generations. To an architect who loves his profession, should anything be more delightful than association with kindred spirits for the discussion in friendly and social ways of the questions which harrass and trouble him in his daily life? The routine draughtsman, whose occupation is so often uncongenial and distasteful, will find in like afflicted ones his true genius showing itself, and his mourning will be turned into gladness as this pleasant and instructive way is opened to him for self improvement. It has frequently been said that all really good draughtsmen on this continent gravitate to the great American centres. Truly those who have become familiar to us through their published work, are generally to be found in the larger cities, for many of them are but professional picture makers, and these naturally seek central location. But we believe that of ordinary office draughtsmen, Canadian cities can show as good examples as any of the cities across the lines. In proof of the assertion we would like to place the initiatory work of the Toronto Architectural Sketch Club beside that of any similar club on the continent. We must confess to the surprise we felt on viewing the competitive drawings submitted in the early stages of the club's existence. Compared with the work we have seen published of similar organizations, they certainly take high rank.

THE recent conference between the Esplanade Committee of the city of Toronto and the managers of the Grand Trunk and Canadian Pacific railroads on the subject of the improvement of the water front, and the removal of the danger to life caused by the existence of level crossings, was not of a satisfactory character to those who feel the importance of having these improvements effected. The railroad authorities showed themselves to be averse to a disturbance of the existing state of things. The erection of a viaduct they declared to be entirely out of the question, alleging in support of this contention that the structure would cost from five to ten million dollars. Sir Joseph Hickson also managed to figure out to his own satisfaction at least, that his corporation would be entitled to compensation from the city to the extent of a quarter of a million dollars yearly for losses occasioned by operating inconveniences under the new system.

If the statements of the railroad managers regarding the cost of the proposed viaduct are entitled to be regarded as facts, then the entire scheme certainly falls to the ground, as it would be suicidal for the city of Toronto to enter upon so expensive an undertaking. It is, however, a singular circumstance that in the opinion of such eminent engineers as Messrs. Wellington, Gzowski and Shanly, the cost of the structure would be less than three million dollars. Since the estimates of the railroad managers were given to the public, Mr. Wellington, by request of the Board of Trade, has further considered the question, and presented a supplementary report thereon. He finds no cause to modify the opinion expressed in his first report that a cash investment of considerably less than $3,000,000 would suffice to construct a four track viaduct. That this estimate is based upon a careful consideration of all the circumstances involved, is evident from Mr. Wellington's offer to enter into bonds for the completion of the work at the above mentioned figure. This estimate, it will be remembered, is for a four-track structure. Mr. Wellington furnishes conclusive evidence, however, that a two-track viaduct, properly equipped with interlocking signals, would be amply sufficient to accommodate the traffic for many years to come. To show that such is the case, and that most liberal allowance is made for future development, the fact is cited that at Philadelphia *fourteen times* as many passenger trains as at present constitute the traffic at Toronto are handled over two tracks for a nearly equal distance. On the question of operative inconveniences and Sir Joseph Hickson's claim for compensation, Mr. Wellington says: "In my judgment it would prove impossible for the Grand Trunk to establish the fact that it would suffer that or any loss whatever from operating inconvenience. It will involve certain inconveniences, in themselves disadvantageous, like most of such settlements; but the balance of advantage will be largely in favor of the Grand Trunk Railway, and they could therefore well afford, in my judgment, to pay a good rental for the use of the viaduct."

To the impartial mind it must certainly appear that at the present stage of proceedings the weight of evidence concerning the cost of carrying out the viaduct scheme is decidedly against the contention of the railroads. In view of the widely divergent views on the subject, the City Council is recommended to appoint expert valuators before whom Mr. Wellington's scheme will be laid, and who will be asked to estimate the value of land to be expropriated, and the damages that will be sustained by the construction of the viaduct and station. As we understand it, this formed part of the duties of the expert engineers who have already reported, and their conclusions on the subject are perhaps as valuable as will be those of the valuators whom it is proposed to appoint, and whose services will cost the city a considerable extra amount, not to speak of the further delay which must ensue. On the whole, we think the suggestion of Mr. Wellington a good one that at the present stage the citizens should be asked to declare whether they are willing that a sum not to exceed $3,000,000 should be expended in the construction of a viaduct. Should a favorable decision be received from them, the Council would be justified in incurring further expense for the purpose of arriving at the exact cost of the work. It is of the greatest importance that a permanent solution of this problem should be reached at the present time, as every passing year serves to render it more complicated and difficult.

A PERUSAL of the proceedings of the fourth annual convention of the National Association of Builders of the United States, held in the city of St. Paul, Minn., on January 27th, 28th and 29th, is most interesting and instructive. It clearly indicates that this Association is performing a work of the highest importance to the building interests. The advantages of organization are thus referred to by President Scribner in his address: "The question is frequently asked by some member of a local exchange, some doubting Thomas, 'What has been accomplished through our organization? Of what value is it to us as a fraternity?' To such I would say that, while our National Association is a purely legislative body, while we have no power to enforce the adoption of our ideas and suggestions by the various affiliating bodies, while we are only permitted to recommend to them the fruits of our councils and deliberations, we have, nevertheless, accomplished much in the elevation and improvement of standards of thought and action among builders. We have grown. We have become and are becoming, not contractors and manual workmen only, but thinking men, who, in ascertaining our own power, in learning to respect ourselves, are earning and securing the respect and esteem of all the better classes, the right thinking men of all professions and callings in the various localities in which we reside. The work heretofore accomplished by this body, having been, as stated, advisory and in the form of recommendation rather than mandatory, the general principles thereby included must have time in which to accomplish the work desired. Let us not be too impatient for more apparent results. I think, however, that no observing member of a local exchange affiliating with this body, himself actively engaged in a branch of the building trades and coming in frequent contact with capitalists and their architects, can fail to have noted a remoulding of sentiment, a growing respect for the art of building and its faithful representatives. A more distinct recognition of the value of the builder in all that tends to promote the comfort, the happiness and welfare of the citizens of this great country. I think he must have noted that not only are we as builders, coming to have greater faith in, and respect for ourselves, but that our brother builder, the architect, is learning to respect and have faith in us and our honesty of purpose not only, but in our ability as well, that in the preparation of plans and specifications for the use and guidance of the builder, in the rules and methods under which such builder is asked to estimate on the cost and value of construction proposed, in the general use and adoption of our "Standard Contract," we see ample evidence already, that the suggestions made by this body are being favorably received and acted upon, by the best exponents of the Science of Architecture in the country, and the fact is being recognized as never before our organization, that to the attainment of the best results in building, it is necessary that the designer and the artisan should work together, feeling that they are mutually dependent, the one upon the other. But for this organization and the earnest discussion by its membership of the apprenticeship question and the needs of American youth in this direction, the seed planted by Col. Auchmuty in New York, would not so early have borne such rich fruits, its influence to spread and widen, thence in the hands of earnest practical builders, till every city in which has been planted an exchange affiliating with this body shall have its well-fitted trade school as well, from whose portals shall graduate, not lawyers or doctors, but young men proud of the right to bear and honor the name of mechanic. But for this organization literally nothing would have been done to concentrate and give definite expression to the views of those engaged in the various branches of the building trade as to their rights, no steps would have been taken to enter the wedge of reform in any direction."

The Secretary, in his report intimates that the past work of the Association has consisted in bringing into existence a standard form of contract, dealing with the apprenticeship question, the lien law, the code of practice for estimation, etc. The objects to which its future efforts should be directed, are stated to be: "To correct the Lien Laws or to secure their final abolition; to establish thoroughly and permanently an intelligent system of training boys and young men to become skillful workmen; to obtain a reasonable and safe solution of the labor question, so that organizations of employers and organizations of workmen may work harmoniously for their mutual benefit, instead of being in constant antagonism; to secure the general adoption of a standard form of contract, so that the system of agreements for building work may be uniform everywhere, and the contractor be assured thereby of protection in this most important part of his business relations with the owner; to thoroughly establish a fair and equitable code of practice in the matter of estimating, in place of the indefinite no-system, which at present prevails, to the constant injury and loss to the contractor. The report further says: "The reforms which we as business men particularly need to secure and the conditions which we particularly desire should prevail, will not be obtained or maintained for us by any of the existing machinery or methods of government, either municipal, state or national. We have a domain of our own, entirely distinct and apart, in which we must establish a domestic economy of our own, and sustain it by ourselves and for ourselves, for the reason that no one else will do it for us, and sustain it continuously for the reason that no forms of government or direction, however perfect in their conception and complete in their parts, can be left to run themselves."

The delegates in a highly intelligent and business like way entered into a full discussion and consideration of such important questions as "The Formation of a Builders' Surety Company," "Industrial Education," "Shall the National Association Recommend the Adoption of the Eight Hour Day?" "The Lien Laws," "Sub-Contracting," "Manual Training." The report of the delegates representative of the territory extending from New York on the east to Duluth in the west, and Louisville, Ky., in the south, showed that only in a few cities and in some branches of the building trades is the eight hour movement recognized. In the majority of cities nine and ten hours consti-

tute the day. In the opinion of many of the delegates, however, the eight hour day is coming, and contractors must be prepared to meet it. The situation will not warrant them in paying the same wages for eight hours work as for ten, therefore the system of payment by the hour will have to be universally resorted to. The merits of the lien laws vary greatly in different States. While good grounds exist for the demand for the abolition of the laws in some States, the feeling of the convention appeared to be that some protection such as these laws were designed to afford is a necessity to the contractor. The necessity that provision should be made to impart technical instruction to American youths is fully recognized, and the efforts of the Association will be directed to this object. The Association manifests appreciation of the fact that changes have taken place in the industrial world during the last few years, and that steps should be taken to meet the changed or changing conditions. Is there no need that the builders and contractors of Canada should take united and intelligent action upon some of the many important questions which are occupying so much of the attention of their brethren across the line?

QUEBEC CITY HALL COMPETITION.

QUEBEC, March 3, 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—Your February number contains several very pertinent articles which I would like to see reproduced in all the leading journals of the Dominion. I allude to your remarks on the "Montreal Subway Co;" "Dangerous Buildings:" "Dangerous Scaffolding."

As to the Quebec City Hall competition, you are probably right in stating that the cost of such a building will be closer on half a million dollars than $200,000. Either the building committee considered it beneath their dignity to consult the undersigned in the premises, or it may be, that knowing from experience that public buildings the world over generally cost about twice as much as the original estimates, they thought by limiting architects to $200,000, the eventual cost might not materially exceed double that amount. With regard to employing the architect whose design shall win the first prize, to superintend the construction of the building, the advertisement does not set forth or imply that he shall not be the party employed, but merely that the corporation reserves the right of not entrusting him with the carrying out of his design; as it is possible that the premiated plan may be from an architect not thoroughly conversant with all the requirements of solidity of construction, not thoroughly possessed of all the qualifications necessary to carry out the work, or whose terms might be incompatible with the means at the disposal of the committee. You will have noticed a similar proviso in the "Instructions to Architects" for the Laval University competitive designs for Montreal in 1886, wherein it is set forth that "The seminary of Quebec does not bind itself to the execution of any of the plans submitted, and that it will confide the execution of the work to the architect who has won the first prize, only in so far as said architect shall afford all necessary guarantees and possess all required qualifications and shall have an understanding with the proprietors as to the fees, salary or percentage to be paid him."

You will also notice that, as stated in the *Engineering and Building Record* of the 15th Feb., while the plans for the Congressional Library building at Washington have been prepared by architect Paul J. Pelz, the work is being carried out, not by him, but under the superintendence of Gen. T. Q. Casey, chief of engineers U. S. A., and Bernard B. Green.

Nor does the "London Tower Competition" set forth or even imply that the author of the premiated design shall be called on to superintend its construction.

Again, with regard to the justice or advisability or the contrary of imposing on competing architects the additional cost and trouble of submitting specifications, bills of quantities and estimates of probable cost, the "London Tower Co.," though the structure must cost fully a million of dollars, and the premiums offered are but £500 and £250 respectively, make it a condition that detailed quantities and estimates shall accompany the designs sent in, and the Laval University competition of Montreal, already alluded to, has it that "Each series of plans shall be accompanied by specifications descriptive of the work and detailed quantitative estimates of the cost thereof." And yet in this case, where the building is estimated to cost more than half a million dollars, the premiums offered were but $700, $500, and $300, respectively; while it was only after considerable pleading on my part that the Quebec City Hall Committee could be brought to consent to what they consider such high figures as $1,500, $1,000, and $500.

As it is, some 56 architects or more from Toronto, Montreal, Ottawa, and Quebec, from Washington, Philadelphia, Baltimore, New York, Boston, Buffalo, Chicago, etc., etc., have entered the field, that is, they have applied for the "Instructions," though possibly as you say, many of them on seeing the conditions may decline to compete where the amount of work to be performed is so considerable in proportion to the premiums offered.

Still, as you remark, and I altogether agree with you in saying so, it does seem unjust to require all competitors to send in detailed drawings, specifications, bills of quantities and estimates of the cost of carrying out a design, until there is at least some probability that the plan will be adopted; and, on the other hand, it does seem necessary that each design be accompanied by at least some general specification or description of the works, or by a bill of quantities descriptive to the extent at least of affording some idea of the materials to be employed, as of the probable cost, to enable the judges or experts to see which of the designs come nearest to an embodiment of the conditions laid down.

I shall look with much interest to any further remarks it may please you to publish on the subject of competitions in general, and to articles on the same subject from your numerous correspondents, with a view to the formation of some code of conditions by which myself and others may be guided in the future.

CHAS. BAILLAIRGÉ,
Architect and City Engineer.

TORONTO ARCHITECTURAL SKETCH CLUB.

ON Tuesday evening, 25th February, Mr. J. W. L. Forster gave the club a talk on "Drawing from the Antique." He emphasized the necessity of students having a clearly defined purpose in their minds in undertaking any such study, as aimless fussing over forms and lines was neither helpful to interest nor profitable in result.

Facility with pencil and pen were first requisites in draughtsmanship. A deep knowledge of beautiful forms was very essential. Mr. Forster spoke at some length on the constituent elements of beauty. Every animated being in creation was harmonious in its parts; even the cur we kick is every inch a cur—agreeing perfectly in every feature with his character. In studying the form of a cripple, all the parts will be in agreement with the deformity, so making the eye content to look upon him. But the higher we ascend the scale of physical perfection, the nearer we approach those mental and moral perfections, which again have a strong, commanding influence over the corporeal form. He referred to the employment of the human form in decorative work, and its utility in the adornment of architectural facades, pointing out to the students the third great aim in study, namely, to create.

A hearty vote of thanks was tendered Mr. Foster for his practical address, which it was hoped would stimulate those present to pursue that most important of all art studies—the study of the antique.

The attention of the meeting was then turned to the drawings, which had been submitted in the second club competition, "A Country Railway Station." These were hung around the walls of the room, and proved most interesting and instructive, the improvement in the club work in the short space of a month being generally commented upon. The students' section should receive special notice, the four who exhibited this month showing very promising work.

The vote of the members on the order of merit resulted as follows: First place, Ernest Wilby; second place, A. H. Gregg; third place, G. T. Goldstone. Junior section First place, T. B. Johnston and H. C. Eddis (equal); second place, Wm. Rae.

It goes without saying that the criticism of Mr. Darling was most helpful, both to the competitors themselves and all present. Before concluding his remarks, Mr. Darling gave some general notes and criticisms on the subject of the American style of draughtsmanship.

On the evening of Tuesday, March 11th, a special effort was made to provide an entertainment of interest to the general public, and a number of invitations, lithographed in a very artistic manner, were sent out. The lecturer of the evening was Mr. J. A. Radford, and his subject "An Architect's Trip through France and Sunny Italy." This was illustrated by some sixty very fine stereoptican views, thrown on a large canvas by Mr. Ernest Wilby's stereoptican. These views had been prepared especially for the occasion. The constantly changing scenes of beautiful buildings and beautiful lands, together with the graphic description and the humorous incidents of the lecturer's own trip, stirred up a longing in every one present to see for themselves these countries.

On account of the large number of outsiders present, a little novation was made in the ordinary business of the Club by calling on some of the local talent to entertain the audience during intermission. Mr. J. H. Fawell's song with guitar accompaniment was well received. Mr. H. Simpson's exhibition of ventriloquism elicited the wonder of all present. His imitation of saw cutting had an architectural character about it which "brought down the house."

The hope was generally expressed that at some future time the Club might have the pleasure of again listening to the talented speaker of the evening, and a hearty vote of thanks was awarded him for the trouble he had taken to provide the entertainment. Mr. C. J. Gibson, who has taken charge of the class work of the Club, reports good progress in the water color class, under the tuition of Mr. C. M. Manly, the members showing marked improvement in their work at each lesson. He has completed arrangements with the same teacher to start a pen and ink class, and hopes that a large number will send their names to him to be enrolled as members. The fees will be three dollars for the course of six lessons, and work will commence immediately.

OUR ILLUSTRATIONS.

CONFEDERATION LIFE ASSOCIATION COMPETITION—SECOND PREMIATED DESIGN.—MESSRS. JAMES & JAMES, ARCHITECTS, NEW YORK.

SCULPTURE DETAILS, HON. G. A. DRUMMOND'S RESIDENCE, MONTREAL.

TORONTO ARCHITECTURAL SKETCH CLUB COMPETITION FOR "THE ENTRANCE TO A RESIDENCE."—DESIGN AWARDED FIRST POSITION, BY "DULCE DOMUM," (MR. ERNEST WILBY).

"CANADIAN ARCHITECT AND BUILDER" SERIES OF PRIZE COMPETITIONS.

THE committee's report on the drawings submitted in the competition for details for small house, had not reached us at the hour of going to press. Consequently its publication is unavoidably deferred until our April issue.

A FIRST PRINCIPLE OF BRIDGE-BUILDING.

If one plank would hold up one hundred pounds on the centre, then two planks placed side by side would hold up two hundred pounds; while, placing the planks one on top of the other, and nailing them firmly together, they would hold up four hundred pounds. In this way we see that, in order to increase the strength of the bridge or beam faster than we increase the amount of material, the increased amount of material should go into the depth of a beam and not into the width of it. This is one of the first principles in the resistance of material, that the strength of a beam varies directly as the width—that is, if we make it twice as wide, it will hold twice as much; and that the strength varies as the square of the depth—that is, if we make it twice as deep, it will hold up four times as much. If we make it three times as deep, it will hold up nine times as much of a load. So that ti can be readily understand that, in order to increase the strength of the bridge or beam without increasing the material in the same proportion, the increased amount of material should be put into the depth and not into the width.

"CANADIAN ARCHITECT AND BUILDER" SERIES OF PRIZE COMPETITIONS.

THE following is a list of competitions in Architectural subjects which we have decided to hold during the winter,

1st.—Design with details for four mantels, two of wood, one of brick and one of stone. Designs to be sent in on or before 1st April, 1890. First prize, $5; second, one year's subscription C. A. & B.

2nd.—Three designs with details, for front fence. Designs to be sent in on or before 1st May, 1890. First prize, $5; second, one year's subscription C. A. & B.

3rd.—Essay on Heating and Ventilation. Essays to be sent in on or before 1st May, 1890. First prize $10; second, one year's subscription to C. A. & B.

The Architectural Guild of Toronto have very kindly appointed a committee from their number to judge the above competitions. We shall publish each report as sent to us by the committee. Draughtsmanship, neatness and clearness of arrangement of drawings will be taken into consideration in awarding positions.

Drawings must be made on sheets of heavy white paper or bristol board 14 x 20 inches in size, and must be drawn to allow of their being reduced to one-half the above size. Drawings must be made in *firm, strong lines*, with pen and *black* ink. No color or brush work will be allowed.

Each drawing must be marked with the *nom de plume* of its author, and the author's name, *nom de plume* and full address, enclosed in sealed envelope, must accompany each drawing sent in.

We reserve the right to publish any design sent in.

Drawings will be returned to their authors within a reasonable time after the committee has given its decision.

METHODS OF MENTAL COMPUTATION.

QUEBEC, March 8th, 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

SIR,—One of your correspondents gives a short and easy mode of mentally computing board measure, or of reducing scantling and plank to board measure. It may not be uninstructive to the profession to know how mental calculation can be applied to compute the weight of bar iron of any size, without the use of the ordinary tables when not at hand, or even when they are, to save the time of searching for the page and item required.

A cubic foot of wrought iron weighs 480 lbs., therefore 1 ft. square by 1 inch thick, weighs 40 lbs. Now this is the only figure necessary to be remembered, and is immediately divisible mentally by 2, 4, 8, etc. Thus a square foot iron ½" thick weighs 20 lbs., ¼" = 10 lbs., ⅛" = 5 lbs., 1-16" = 2½ lbs., 1-32" = 1¼ lbs., 1-64" = ⅝ lbs.

Now suppose we wish to compute the weight of a bar of iron of any length and of ⅜" x 3". Since ½ gives 5 lbs. to the square foot, 3½ gives 3 times that or 15 lbs., and as the bar is only 3" wide or ¼ of a foot, its weight will be ¼ of 15 lbs., of which the half is 7½ lbs. and the half of this 3¾ lbs.; which into the number of feet in length of bar gives the required result and all this is done in much less than half the time I have taken to write or read the process.

If the bar is ⅞" x ⅞", the process in this case is simplified by spreading it out mentally into a sheet ⅛ thick. Now 7 x 7=49-8 and 49-8=6⅛ inches. Again 6" of ⅛" thick equal ½ of 5 lbs. or 2½ lbs., and the remaining ⅛ inch or 1-48 may be either neglected or added; thus: 2½ lbs. =2½ times 16 oz.=40 oz. which gives say 1 oz., or more correctly 4-5 of an ounce, together 2½ lbs.+4-5 oz. or 2 lbs. 9 oz. nearly.

If the bar is 1¼ inch square: spread it out mentally into a sheet ¼ inch thick. Now 5-4 inch x 5 times=25-4 or 6¼—6 inch of ¼ inch iron=5 lbs. and the ¼ inch=1-24 of 6 inches or say 1-25 and 1-25 of 5 lbs.=1-5 lbs., then the bar=5 1-5 lbs. to the foot lin.; Or the ¾ inch bar of the first example if preferred may be spread out into a sheet ⅛ inch thick and if 2½ inches wide, will give 7½ inches broad if ⅛ inch iron, and 6 inches if it is equal 2½ lbs., and the remaining 1½ inch=⅛ of 12 inches or ⅛ of 5 lbs. or ⅝ of a lb. together 3⅛ lbs. for a lineal foot of the given size.

For round iron compute as if square and then multiply by decimal 7854 or take say 7½ per cent. of the weight of the square bar, but as this is difficult to compute mentally, let us call it 80% or 4-5; or from computed weight for square deduct 1-5 for round, which leaves you on the safe side and helps to make up for odds and ends which may escape your attention.

With regard to cast-iron, its weight is but 450 lbs. to the foot cube, or 1-16 lbs. less than wrought iron, therefore, compute as for wrought iron to avoid fractions, and deduct 1-16 if necessary, though to allow for extra thickness and to be on the safe side I seldom make the deduction.

C. BAILLAIRGÉ.

OBJECTIONS TO TECHNICAL EDUCATION CONSIDERED.

TORONTO, March 4, 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

SIR,—One of the chief objections raised to technical instruction by means of trades classes has been, that it would increase so largely the competition in the different trades taught, as to prove an injury rather than a benefit to those engaged in them. I do not see it in that light, for as soon as bricklayers, plasterers, carpenters, etc., had got to work, there would be established classes for plumbers, printers, etc. The boy who would seek to learn the trade of printing would not attend the class for plasterers and bother his mind with trying to learn how to run segmental, elliptical and gothic arches.

I would like to ask the opponents of trades classes, how an apprentice is to lay out works such as his employers never contract for? For instance, there are men in Toronto who have served their apprenticeship, but have not the least idea of how to lay out or run an arch of any kind. I am now speaking of the plastering trade.

This matter of technical instruction should be taken up by somebody, but there is small encouragement for anybody to take it up, when we find as its opponents the very people it would most benefit, viz., the tradesmen. We can hardly expect doctors, lawyers, or professional men of any kind to interest themselves so long as this condition of things exists. Professional men have their "trade classes" (under another name). Fancy an architect opposing the teaching of architectural drawings, and giving as a practical reason that it would make too many architects!

Yours truly,

ONE INTERESTED IN THE APPRENTICES.

EMPLOYMENT OF A QUANTITY SURVEYOR.

QUEBEC, Feb. 26, 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—Your remarks re the advisability of architects employing "quantity surveyors" in the preparation of bills of quantities for contractors to tender by, are altogether to the point, as my 40 years experience enables me to testify; and there is among others one very potent reason why this practice should be adhered to, to wit: when quantities are supplied direct from the architect whose design is to be carried out, he is, in case of any omission, error or deficiency in the quantities looked to by the contractor to recommend extra pay on account of the additional work thus entailed, and which he has made no allowance for, though binding on him to execute under the requirements of the specification and contract.

This puts the architect in a false position towards his employers, by saddling him with a responsibility of which he should be clear, and is, when the quantities are had from a third party, whom the contractor can hold liable for errors or satisfy himself of the correctness thereof, thus in either case disengaging the architect's responsibility and securing his absolute impartiality of action in the premises.

CHAS. BAILLAIRGÉ,
Architect and City Engineer.

PERSONALS.

Mr. J. E. Ellis, architect, has opened an office at West Toronto Junction.

Mr. Fred Henry has succeeded to the architectural practice of the late Geo. F. Durand, London, Ont.

The officers elect of the recently organized Toronto branch of the Canadian Society Civil Engineers are: President, Mr. Alan Macdougall, Secretary and Treasurer, Mr. W. R. Pellsworth.

The death is announced of Mr. W. J. McAlpine, the noted American civil engineer who some few years ago was engaged to examine into and report upon the water supply of the city of Toronto.

Mr. Haskins, City Engineer of Hamilton, finds the work of his department growing to such an extent that he will ask for the help of an assistant. He is said to have nominated Mr. T. H. Barrow for the position.

The many friends of Mr. F. J. Rastrick, Hamilton, Ont., will regret to learn that his residence was damaged by fire to the extent of $1,000 a few days ago. Mr. Rastrick is in poor health, and the shock to his nervous system by this unfortunate occurrence will no doubt tend to further retard his recovery.

QUERIES AND ANSWERS.

MONTREAL, March 5th, 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—Could you inform us of the address of a manufacturer of Canadian portable houses. We believe these were made in Upper Canada the time of the opening up of the North West. We have an inquiry from a friend in London, who would probably take about a dozen.

Yours truly,

CASTLE & SON.

[We shall feel obliged to any of our readers who will furnish the required information. ED. C. A. & B.]

TRENTON, Feb. 19th, 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—Under the head of "Queries and Answers" "Enquirer" is advised to line his chimney with glazed drain pipes, as it would be an absolute remedy against dampness, complained of. I believe it would; but it is possible that he might get into another difficulty that would be no less annoying.

I was once employed on a chimney where the contractor supplied glazed pipes 15 inches diameter, and thought he was using the best material, but on inspection the glazed pipes were ordered to be removed and their places supplied with unglazed pipes, as the soot was said to collect and adhere to the glazed pipes so that it could not be swept off, and the flue would eventually be stopped up.

I would like to hear from some one who has had practical experience on this point.

Yours respectfully,

A SEARCHER FOR FACTS.

VAULT CONSTRUCTION.

Editor CANADIAN ARCHITECT AND BUILDER.

SIR,—In your January number a correspondent asks for opinions as to the relative value of "two 8 inch walls with 2 inch air space between, or 12 inch wall outside, and 2 inch air space with 4 inch wall inside, bonded say every 5 feet super. to outside wall."

While I am of opinion that no vault, intended to be fireproof, should have its outer wall less than 12" in thickness nor its inner wall less than 8", I agree with you that two walls 8" thick, entirely dis-connected to springing line, with 2" air space between, affords greater protection against fire than the other plan suggested by your correspondent; for I consider that a 12" outer wall would, in case of a severe fire, absorb more heat than the 4" lining could safely resist.

Again, the method of bonding the walls together with a header brick every 5 feet super. is objectionable; for each header would become a conductor of heat, and thus the benefit of an air space would be lost, and the fundamental principle of vault construction would be completely ignored.

Yours truly,

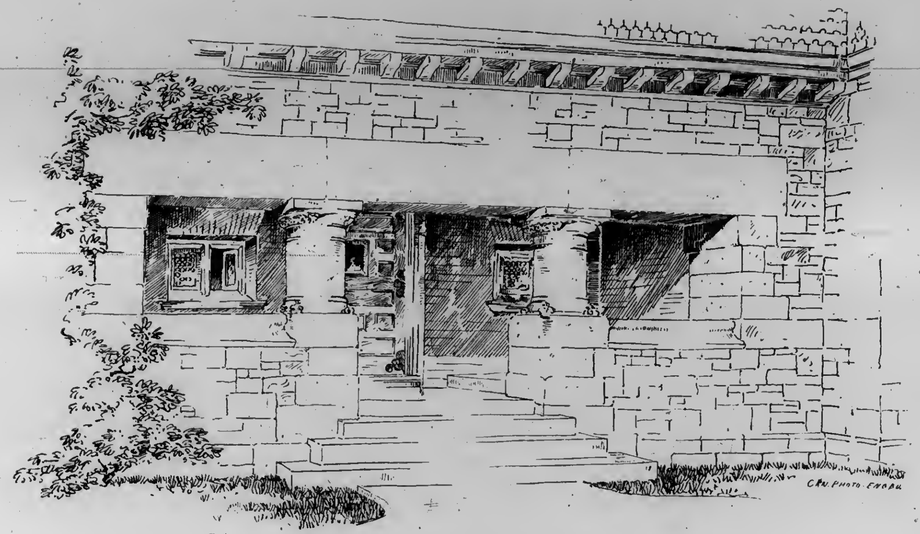
March 4th, 1890. FIVE PER CENT.

QUEBEC.

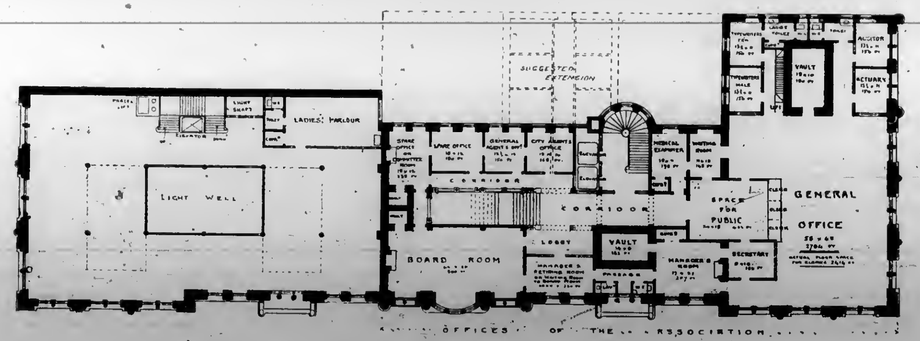
(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

A MEETING of architects practising in this city was recently held in the office of Mr. Berlinguet, when a committee was named to take the necessary preliminary steps to organize an Association of Architects for the city of Quebec, with the view, later on, of extending its operation over the Province of Quebec, by requesting Montreal architects to join in the movement. At a late meeting of the committee it was decided to defer any further action until it was seen how the Bill to incorporate the Ontario Association of Architects fared, particularly as it was impossible to get a Bill through the Quebec Legislature this session owing to the proposed early adjournment of the House.

Referring to the City Hall competition, one architect speaks of the "Instructions to Architects" as reading more like a description of a design already prepared, than as a basis of designs yet to be elaborated, while another considers it unfair that the document referred to should have been printed in English only, a reasonable objection, when it is remembered that with one exception all the local architects are French, as well as a



Toronto Architectural Sketch Club Competition for "The Entrance to a Residence." Design awarded first position, by "Dulce Domum," (Mr. Ernest Wilby).



Plan Accompanying Competitive Design for Confederation Life Association Buildings.

Sculpture Details—Hon. G. A. Drummond's Residence, Montreal.

large number of Montreal architects. It is quite possible that the prospects for the erection of the proposed building may be changed as a result of the municipal elections held yesterday, no less than seventeen of the old council having either resigned or been defeated, many of whom it is believed were in favor of erecting the costly structure. Seeing the people generally are strongly opposed to increased taxation, as shown by yesterday's election, it is difficult to imagine how it can possibly be done, as it is certain if $300,000, or just as likely $400,000, were spent in this direction, increased taxation must follow.

Two additional buildings to those already noted have been contracted for on the newly widened St. John Street, and active operations begun.

Mr. Duquet, the well-known jeweller, is putting up a handsome stone building from plans made by Mr. Peachy; the contracts amount to about $15,000 and are in the hands of Messrs. De Varennes and Perron. The heirs Andrews are also erecting on the adjoining lot a three storey stone store and dwelling, from plans furnished by Mr. Stavely, at a cost of about $6,500, Messrs. W. J. Peters and W. Sharp being the contractors.

MONTREAL.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

PLASTERERS' STRIKE.

THE journeymen plasterers and master plasterers have at last come to an understanding, and work has again been resumed by the men. The terms agreed upon are that the men shall receive $2.75 per day, and the bosses shall have the right to employ a third apprentice when the second apprentice is in his last year. This is a sort of compromise between the men and masters. The men asked $3.00 per day and were offered $2.50. This agreement has, I understand, to hold good for twelve months from the first of May next; no strike is to take place during that time, and either party wishing to change this agreement must give at least four months notice.

The effect of the recent strike will not be felt so much by the men now as later on, as all work is behindhand, and consequently every one is using every endeavor to make up for lost time, but there is no doubt that the strike has caused many buildings to be delayed that would otherwise have been started this spring.

PAINTERS' AND CARPENTERS' DEMANDS.

The rumor regarding the painters' and carpenters' proposed strikes I do not think will amount to anything, as the town is full of carpenters and painters. A good mechanic can always find fair remuneration for his services, and most of our best builders are willing to treat their men fairly.

LAST YEAR'S BUILDINGS.

During the year 1889, 1,032 buildings were erected in Montreal, the total value of which amounts to $3,608,300. The buildings of greatest value were erected in St. Antoine and St. Lawrence Wards., St. Antoine alone being $1,234,150, and St. Lawrence Ward $581,650.

REAL ESTATE.

The real estate market during the past month was a little brighter than that of the previous month. No doubt holidays, bad weather and "grippe" accounted for January's dullness. Several large transactions have taken place during the past month, and rumor has it that Toronto capitalists are seeking investment in real estate, not only in the city, but in our suburbs, one or two farms having been purchased by Toronto syndicates at Montreal Junction.

CANADIAN SOCIETY OF CIVIL ENGINEERS.

An ordinary meeting of this society was held at McGill College on the 23rd instant, when a paper was read and discussed on the manufacture of Canadian cements, a subject on which very little is yet known. It was the general opinion of all present that if a thoroughly reliable Canadian cement could be manufactured, the engineers would only be glad to encourage its use, and thereby encourage home manufacture.

FLOOD PROTECTION.

I learn that nothing has yet been decided upon with regard to the protection of the city from floods. It appears that the Government have not yet approved of plan No. 6, a question having arisen regarding its effect on the south shore of the St. Lawrence. Sir Hector Langevin is reported as having said that no scheme which will affect the natural flow of the St. Lawrence will be approved of.

PRIVATE BILLS.

The Local Government at the request of the city of Montreal, assisted by Hon. James McShane, have thrown out the people's gas bill and subway bill. The city is to be congratulated on their success in these matters. While I am not in sympathy with the present gas monopoly in our city, yet I do not approve of granting charters to any company whose only object would be to sell them to the best advantage. The position we take in all these matters is that the incorporation should be genuine, and no charter should be granted which could be sold, bartered, traded or given away to any existing company, but it should be clearly understood when a charter is given that the parties receiving it mean business and should deposit with the city some security for the faithful execution of their charter.

Mr. W. W. Cowan's bridge building works at Stratford, which have been under temporary suspension, have resumed business. It is understood that Mr. Thos. Holiday has been admitted to a partnership with Mr. Cowan.

DECORATION AND FURNITURE

RECENT DEVELOPMENTS IN DECORATION.*

A WELL-KNOWN writer says: Art moves in cycles of styles. At one time a separate style in blended form is resurrected; at other times we witness blended styles. New combinations of old styles may create a novelty, with nothing new in principle, new only in arrangement and with no great variety in details. We have few decorative forms that do not retain some element of a proceeding period." To this we can not dissent. Those of us who have given any attention to the origin and composition of style in decorative art will readily agree that in the present era there is little or no purity; although we may be compelled to call such by, or adopt, some classical name for our purpose, the intent is not to deceive, but the designer merely wishes to convey the idea that the scheme was not to faithfully decorate in exact reproduction of some period or era of time, but simply to avail himself of the advantages of that particular style, with such adaptations, in form and color, discarding here, appending there, modifying this, strengthening that, and reserving the right to make such changes as will best accord with the surroundings, improvements, temperament and culture of to-day.

We endeavor to be as classical as our knowledge and resources of material will permit. We all know to consistently decorate in say the "Louis XV" or "Japanese" style if we at all succeed in obtaining the genuine article, we do so at a great outlay, and then we may venture the opinion that our stained glass, mantel and fire-place will be very modern, and the exterior architecture will be composite "Romanesque."

Although we are utilizing all styles in our present decorations, the predominating ones have been adapted from the French period of the "Rococo" the different kings, Louis XIV, XV, XVI, and the Empire. The revival of these styles has chiefly been confined to interiors, while the "Cinqe Cente," "Italian Renaissance," "Romanesques," "Early English" and "Elizabethian" in composite form with "Celtic" and "Bysantine," as well as the "Adams," are extensively employed both for interiors and exteriors. Modern inventiveness joins hands with ancient picturesqueness and produces varying and unique results. This we see constantly exemplified in the interior as well as on the exterior of our buildings. Our own, and only style, the "Colonial," has found amazing power with our people, and no wonder; what prettier, more uniform, or chaste style have we? If simplicity is beauty, our "Colonial." style will be a joy forever. Although light and not sufficiently ornate for all purposes, we will surely find and develop some other one for our more substantial work, and the present indications point strongly to the adoption of the "Romanesque."

A gratifying change is being made by our architects. Formerly, when the dwelling was constructed by the builders, they considered their work done, and their interest ceased upon its completion.

To-day a large number have added decorative departments to their offices and designs for the interior decorations. And who better qualified than they to enter the field with us? Equipped with their knowledge of leading styles, and of home building, their drawing and designing abilities, who better prepared to take hold of this, their new field, the supervision of the interior decoration? Their ideas and hints cannot fail to be valuable to us.

The painter will naturally be brought in closer relationship with the owners, for the architect will not hold further communion with the contractor or cabinet maker when engaged on his scheme of decoration, for they are valueless to him then, but will confer directly with and impart his views to the decorator; the man whose technical knowledge and experience so perfectly fit him to be the architect's able coadjutor, to aid him to harmoniously color and execute in detail his sketches, thus avoiding

* Paper read by Mr. Johansmeyer before the New York State Convention of Master Painters and Decorators.

the misunderstandings when imparted through an intermediate, and the saving of at least one profit to his clients. This result can but be beneficial to our craft. Emancipated from the contractors, we will be distinct and receive that independent recognition, for which we are so bravely striving.

The coloring used in decorating a modern dwelling is always, consciously or unconsciously, controlled and dictated by the prevailing fashion. To gratify its whims, new shades and tints must constantly be created. These colors will appear in the latest textile fabric, and necessarily are introduced in the surroundings. The painter must become acquainted with these and introduce them in his scheme of coloring. In the selection and arrangement of his colors, his degree of taste, refinement, and art will be seen. He may possess all necessary scientific and technical knowledge of his calling, his treatment with the brush be skillful, his judgment of design and proportion of same be perfect, but the entire effect may be destroyed, or, at least, marred, if the coloring does not receive the proper attention.

The successfully decorated room receives its maximum amount of work, not in labor or material, but in thought and study. A certain shade in one place will appear entirely different when exposed and contrasted to different lights and surroundings, "Seeing is believing;" this trite saying aptly applies to a decorator studying a color effect.

It is true we have certainly improved our taste for colors. The abandonment of those gaudy and incongruous colors, seldom resulting in harmony, to the fewer, chaste and subtle tones of color used to-day is convincing proof of this. In choosing our colors, attention should be given to the character of the apartment; whether gay or grave; dignified or mirthful. Its occupants or frequenters, whether old or young; masculine or feminine; we study carefully and choose such a plan as would best adapt itself to our purpose, so we select one color for our scheme and use that in its varying shades, or introduce into our scheme its proper complimentary tones, studying to create a perfect harmony and to obtain the most beautiful results in the simplest manner.

To endeavor to name the prevailing tones of color would be too exhaustive, and would convey but a faint idea of their manifold number. Our intimacy with the names used in dress goods will be of assistance here. It is impossible to have a name for all our colors. The best tones for decorating are those half tones that border on or hover between several colors without being either; those indefinite subdued tones, whose beauties must be felt to be properly appreciated as they cannot be described, viz., "russets," "sage green," "cadet blue," etc. Take "terra cotta," for instance, what name more indefinite and vague, you can draw any conclusion from the color from a soda biscuit to a Pompeiian red and you will not be in error; so with olive and other tones. As a rule, artists do not spend much time in learning the name of a color, but in producing and developing the same, which is most important to their purpose.

Gold and bronze will be constantly employed in decorations. The latter not extensively as formerly. Its very cheapness, the profusion in which it was used, its perishable nature, all have caused a great reaction to set in. This ought to be a welcome change, as the demand for pure gold leaf will insure a higher grade of work throughout. Gold or bronze should never be used *en masse*, or in profusion, but should be used sparingly and with judgment, or it will suggest ostentation. It ought never to be used on back-grounds, unless in very small patterns or mottled effects, or when closely covered with ornament, but rather introduced to heighten an already rich piece of coloring. Drawings should be of a minute and graceful character, lines should be finely drawn and only the high parts of relief work be illuminated with gold. To treat otherwise would be barbarous and vulgar. As gold naturally suggests riches and as the height of culture and refinement inclines to modesty and reservedness, it would certainly be inconsistent to obtrusively display too much gold.

In the past few years a new method of treating our decoration has sprung up, and consists of the manner of preparing our back grounds with gold size and covering with metal or composition leaf, either gold, silver or copper, and then applying with transparent colors, a glazing or lacquering of any desired hue over the same. This softens and robs the metal of its tinsel appearance. These backgrounds are used, as well for artistic, as fruit, game, etc., as for conventional ornamentation. Some very curious and beautiful results have been produced in this way, but great care must be exercised or the decorator will find that the results of his attempt will have a cheap varnishy effect.

The covering of walls with silk, tapstery and cretonne, is on the increase for finer wall hangings. As a rule the effects are very beautiful, the good coloring and softer nature of the material, easily accorded them with their surroundings, but its perishability, the ravishes of moth and dust, the fading of the aniline dyes, will prevent the adoption of this material for permanent decoration.

The demand for canvas or muslin covered backgrounds is steadily growing for our more permanent mural decoration. This is certainly a step in the right direction and is cheapest in the end. Hasten the day when it becomes more in vogue, for one of the severest difficulties the decorator must contend with and resume responsibility for, is the poorly finished plasteriog of a modern house. After overcoming this difficulty and successfully decorating the room, he is apt to see his best efforts mocked at by the blistering and cracking of the plastering.

Relief decorations have been tested and found successful, and the decorator will find steady employment for it. Whether in a classical, unique or modern style, modeled by form or hand or stamped by machine. The inventions of material and method of applying this plastic or solid relief have been numberless from pressed papers to the heavy stucco work, all comes under the heading of relief or raised work. The advantage of relief is the large variety of treatment of which it admits, and where the decorator has his opportunity to display his talent to obtain the most beautiful results. In this latter respect there has been a gradual improvement, the demand for the so-called roughing or combing has grown steadily less. It has seen its day, but the higher grade of artistic free hand relief work, which requires the services of a modeller, is in increased demand.

A new material for relief ceilings has made its appearance, and is composed of either sheet iron or steel, corrugated or pressed in ornamental forms and then put up in panels, after which it is painted and decorated, and it is difficult to distinguish it from plaster relief. The uses of these ceilings have been confined to stores, however. We have also seen these ceilings put up already decorated in a burnt and glazed imitation of lacquered metal, but a very cheap and tinsel effect is the result.

Paper hangings continue to be extensively used if not quite as much as formerly, still sufficiently to keep our coadjutor, the manufacturer, on the *qui vive* in inventing new designs, colors, materials, etc., for the laws of health must be consulted by the decorator, and we are giving the hygienic and sanitary condition of our dwellings close attention for these reasons; washable and sanitary papers find most favor, while metallics, velours, etc., are left on the shelves.

There seems to be a disposition to return to painted walls for our sleeping apartments, not in the old-fashioned treatment, but in blended damask effects, and a variety of other pretty ways; the decorator has sufficient scope here, and may be as broad in his treatment as he chooses. By the way, a large number of decorators are only putting friezes on parlor and music room walls, and then they must be an exact match in design and color with wall hangings. The difficulty of exact width, design and color, unless when painted for the upper rooms, has led to their abandonment.

Our employees, who are in reality our assistants, are also giving constant evidence of their improvement in taste and judgment. A few years ago, when the paints were mixed in the shop, a workman rarely had opportunity to develop his taste for colors, for taste can be developed and cultivated; but to-day, when all parts of a room must be in sympathy and in harmony with the general tone of coloring, his thinking faculties, as well as his dexterity as a brushman, are brought into use with most beneficial results, which promises brightly for our calling. Our workmen feel the impulse of our efforts to elevate the standard of our craft, and nobly responded when called upon for assistance. Our artists are studying for a high ideal. Never before in the history of decorative art in this country were there better skies, flowers, figures or allegorical paintings executed; coloring more harmonious; drawings more perfect, and technical treatment more varied and finished. Doubtless the change intended for permanent decoration of painting the canvas in oil in the studio, where, undisturbed they can ply their art, has been the cause of inceuting and spurring them on to their highest idealizations, as well as the recognition and appreciation accorded by a liberal public. There is plenty of work for them to do, landscapes and marine views, figure groups, all that pleases the eye on canvas can appropriately be used in decoration.

Art is said to be that which appeals to our emotions and impulses, whether it be music, sculpture, acting or painting, and stimulates or depresses them through the different senses. If so, then our calling is indeed an art. An harmoniously tinted room—without being poetic, and speaking of symphonies and dreams in color does that not instantly welcome and comfort and make us feel at ease? How often have you entered a room, and immediately there was a drop of twenty degrees in the temperature, and you received such a chill? Some coloring is so offensive, it instantly arouses a feeling of indignation or combativeness in you. You feel as if your calling were trifled with; and again you step into the adjoining room, and your outraged senses will be instantly soothed and quieted, so suggestively reposeful has the work been done. Some natures are so blunted that they are not affected in this manner. The more impulsive the spirit, sensitive the nature and higher the culture, the more readily affected we will be.

Truly there is a soul in our art, or at least a finer feeling, not gifted to all, which must be disciplined and cultivated, for to be able to discern those subtler tones, to appreciate those minute differences in tints and shades, to feel the effect of warm and cool, or to distinguish between chaste and vulgar colors, there is something more than the technique of a craft required to be thus affected.

The more we are surrounded by beautiful forms and harmonious, the more exacting becomes our natures, the greater our requirements, the higher our ideal. It is our education, our intelligence; our culture, that creates this natural demand for a higher art. We know there is no finality in art, but we must endeavor, on all occasions, in return for our labors, to attain the greatest amount of permanent beauty, and to strive, constantly strive, to reach the highest excellence, the position occupied by our old masters of the 15th and 16th centuries.

DECORATIVE ELECTRIC LIGHTING IN ENGLAND.

ONE of the finest effects possible to be attained by electric lighting, says the *American Machinist*, will be when the light is completely concealed—when, in other words, the light is diffused, as in day time, coming from nowhere in particular. Attempts have been made to produce this effect by throwing the concealed light upon the ceilings, but they have not been very successful. On the grounds of a certain out of London residence, there is a large fountain 70 feet across, which, by a touch of a switch in the drawing-room window, can be illuminated in the twinkling of an eye, by glow lamps below the surface of the water. Similarly beautiful effects are familiar to the visitors of the big exhibitions, which now appear to have become permanent institutions in London. For producing effects of this sort, gas is of course useless; it requires oxygen, whereas the electric filament glows in vacuo. The simple fact that the electric light shines anywhere and sets nothing on fire suggests boundless possibilities in an entirely new field of domestic—and, when the civic sense is fully developed, public—decoration. There is one firm of electric fitters and designers which has the lighting of 22 large private mansions on hand at the present time. We know of another English firm—not of fitters and designers, but of engineers, whose business it is to put down the "mains"—which has had the supplying of some 300 country mansions. All this says something for the prospects of what electricians are already calling the fine art of lighting.

SANITATION AND HEATING

CANADIAN ARCHITECT AND BUILDER COMPETITION ESSAY ON PLUMBING.

BY "T. SQUARE."

NO subject which relates to the construction of dwellings is more worthy of careful study and consideration by the architect, builder and householder, than the sanitary plumbing of our houses, inasmuch as nothing conduces so materially to the health and comfort of the occupants of a building, as a well considered and carefully carried out system of plumbing, as applied to drainage and water supply. Much has been done within the past few years calculated to disseminate knowledge on this important branch of learning by articles in our building and sanitary journals, letters, and discussions in the daily papers, all of which have helped to scatter broadcast the germ of enquiry; in consequence of this, a considerable impulse has been given to the consideration of sanitary matters, and now commonly amongst the first questions asked by a proposing tenant are—where does the water come from? Is the drainage perfect? Were the plumbing works superintended by a competent authority? Are the pipes properly ventilated and trapped? and the like. In most of the large cities of this continent there exists a sanitary code and system of inspection, which have done much to improve the plumbing of our buildings, and it would be well were such laws and inspection extended to towns of smaller pretensions. Recently in a town of no considerable size, the writer had occasion to enquire if there were building regulations or by-laws with regard to plumbing existing in the municipality, but was informed that as this was a free country, all could do as they pleased in these matters; it need scarcely be remarked that such a state of things should not be allowed to continue. It is not proposed in this paper to enter into a discussion regarding the different kinds of fixtures, or the capacity and strength of the various pipes, but rather to treat the subject in a general and comprehensive way, endeavoring to show what are the principal questions to be considered in arriving at a good and desirable system for the piping of any dwelling, large or small. As a general principle, the piping should be arranged in as simple and direct a way as possible, so as to avoid all unnecessary complication, all internal pipes should be exposed in full view, run in grooves in walls, or boxed so that they can easily be got at. In no case should they be allowed to run inside partitions, and long runs of pipes under floors should be guarded against as undesirable.

Water closets, fixtures, wash basins and the like, should, as far as possible, be placed in rooms over each other to save piping. In small houses it will be found convenient to place the bath-room over the kitchen. Till recently it has been the general practice to box round with wood panelling the water closet apparatus, the bath and the wash bowl, etc., and to place underneath these fixtures a lead safe and waste pipe attached. In the greater number of buildings it is even now done; far better in every respect would it be if such boxing, where possible, were entirely abolished and the fixtures left open to the view. The flooring of such rooms could be made water tight with tiles, etc., so that any leakage that might occur would not penetrate the ceiling below. Such an arrangement allows for the cleansing of the fixtures and the flooring around them, and facilitates any repairs that may become necessary from time to time. Outside drains should be of glazed vitrified stoneware pipes laid to an even grade, junctions to a line of piping being made with Y branches, and bends with special pipes of easy curve, and in good ground a sound joint should be made with tar cord and cement, whilst in loose ground tar cord and clay puddle should be used in the joints. In loose soils, to secure an even bed, sand or fine gravel might be laid with advantage, and great care should be taken that when the earth is returned, the pipes are not disturbed.

In some cases it may be found necessary to drain the ground of cellars. This will be best effected by the use of small size

land drains unjointed except with collars of muslin to prevent earth or vermin entering pipes. The piping should be placed about two feet below the ground, and discharge into a larger pipe which should be trapped before connecting with the outside or main drain. As it is imperative that this trap should always remain sealed, it will have to be kept so by some automatic means. It is recommended, however, that instead of such drainage, the cellar be secured from damp by a flooring of concrete or such material as may be considered expedient.

Where leader pipes carrying rain water are to connect with the outside drain, they will require to be trapped with a deep seal trap to secure against evaporation, but should the heads of these pipes be remote from, and above windows and other openings to the building, then, it is considered, the traps may be dispensed with. A leader pipe should not be used to carry away any foul or other wastes from the building.

Soil pipes should be of iron, or glazed earthenware socketed pipes jointed with tar cord or cement. They should be carried five feet beyond the outside wall of the building, and there connect with the outside stoneware drain, which will discharge itself into the main drain or cesspool. In the event of the soil pipe running near a well from which drinking water be obtained, it would be desirable to continue the iron or glazed stoneware pipe well beyond it, and in the case of stoneware pipe, surround it with two feet of clay puddle, so that there may be less chance of leakage and consequent fouling of water. The soil pipe should be carried in as direct a line as possible, its full size, up through the roof a sufficient height and left open. If thought expedient, it may be protected from the weather with a cap placed some little distance above it. Should the main sewer be of large capacity and well ventilated, it will not be imperatively necessary to trap the soil pipe, but if such should not be the case, or the house drain discharge into a cesspool, then a half S trap should be introduced into the soil pipe at a point near where it leaves the building, the same being provided with a proper inspection and clean out hole and cap. If possible it will be better to keep the soil pipe above the cellar floor, and support same on thick piers or with iron hangers. In the event of a trap being used, then there should be a fresh air inlet provided on the inside of the trap, and the mouth of such air supply pipe should be placed in such a position that it may not be choked with snow or rubbish. Four inches will be large enough for most soil pipes, but they should not be above six inches.

Water closets should be placed as far as possible in well ventilated rooms with windows opening to the outer air, and not in darkened and out of the way positions where sufficient light and ventilation cannot be obtained. A ventilation pipe should be carried from or near to the ceiling above the roof, and in order to secure a constant vacuum in the room, so that foul air may be prevented from escaping to passages or adjoining apartments, a ventilating cowl should be attached to its head. Each fixture should be provided with a seal retaining trap with proper means for cleansing, and if a ventilation pipe be necessary from same, then it should be carried as directly as possible up to and well above the roof, and should be enlarged to at least four inches before passing through roof, and be left open at top. Drip pipes from lead safes under fixtures should not be connected with any soil or waste pipe, but should be made to discharge either over, say, the kitchen sink or in some place in full view, so that leakage may be at once noticed and repaired. Each fixture should be provided with a flushing tank, as nearly over it as possible, to secure a sufficient and constant supply of water.

Waste pipes from bath tubs, wash basins and sinks, should never be trapped immediately below the outlet of the fixture, and the pipe carried to the soil or main waste pipe. Should there be a separate waste pipe system, then the main waste pipe should be ventilated by carrying it well up above the roof, and the same should be enlarged to say four inches before passing through the roof and be left open at the top. Overflow pipes from these fixtures should be connected with the waste pipe above and never below the trap. The traps should be provided with proper clean out attachments. Waste pipes from ice boxes and drinking fountains should not be carried directly into any soil, branch or main waste pipe, but should discharge into a safe or sink, which should itself be trapped and waste pipe carried as above described.

Water pipes should be so laid that in the event of needed repairs or otherwise, they can be readily emptied, a draw off trap should be provided in the main supply pipe at the lowest point, and a stop cock immediately inside the building and on such branches from the main pipe as may be considered necessary or desirable. Water pipes in buildings should be fixed in positions least exposed to frost, as in the event of a pipe bursting from want of such precaution, considerable damage may be done before the water can be drawn off and the repairs made. It is recommended that there be as few fixtures placed in a building as possible, consistent with convenience, especially water closets, as unless these are kept in constant use and the traps full by daily flushing, there must always be a liability of unhealthy vapors arising from them. It would be as well to keep them out of sleeping apartments and dressing rooms, and to place them only in special apartments devoted solely to their use.

It is desirable that urinals should not be placed in private dwellings, and where it is essential that they be provided, they should be fixed in some well ventilated and isolated spot. The efficiency of plumbing may be said, in a general way, to consist in sound piping of proper size and material, sound jointing and efficient trapping; with regard to the first, all pipes should be tested as to their strength and soundness before being placed in the building, and after they are fixed, the junctions made, and all supposed to be complete, they should be again tested by one or more of the various methods now adopted, to ascertain if the whole system be secure against the emission of liquid or sewer gas. The material for piping has not so far been touched upon but the writer considers that iron or vitrified stoneware for soil, and iron for waste and supply pipes will be the best to use. Short branch wastes or water pipes may be conveniently of lead. In glancing over the foregoing, the writer fears that some of his remarks may be considered somewhat dogmatic, but he hopes that his readers will excuse him on the score that it is his belief that if the few suggestions offered be carried out in an intelligent manner, due consideration being given to the arrangement of piping in each particular case, that a satisfactory system of plumbing will be the outcome.

INSPECTION OF PLUMBING IN TORONTO.

Editor CANADIAN ARCHITECT AND BUILDER.

SIR,—Now that the city has a new engineer, and the re-organizing of the works department is in progress, it is hoped the plumbing department will not be overlooked. The complaints of the master plumbers and the public who have business there are very numerous. The amount of time wasted in obtaining the necessary permits and inspection of works is a serious matter, and demands the immediate attention of the city officials. As matters are now conducted, the time between giving notice for inspection and the appearance of the inspectors is any where from three days to three weeks, just as it suits the convenience of the inspectors, and often workmen have to be kept waiting for days because the inspectors has not been around to pass the job. If these men really have so much work that they cannot be more prompt, the master plumbers should demand and the city should appoint more men. In my opinion a great deal of valuable time is wasted every day by the inspectors in the office. They are supposed to be at the city hall at one p. m. every day to report, receive instructions, &c., and by the time they have examined plans and specifications and done considerable gossiping, it is often three or half past before they leave to commence their afternoon calls, and as they (being city officials) do not work after four or five o'clock, very little is done. It seems to me that this could be in a great measure remedied if some competent person who understands plans, &c., was placed in the office to give advice on matters of drainage and plumbing work, so that when the inspectors come in, they would not have to parley with about a dozen vexed and dissatisfied citizens, but take their orders from the clerk or chief inspector, and go about their work.

Persons presenting a plan and specification are told that nothing can be done until the inspector has examined it and given in his report, and so no matter how urgent the case may be, he has to wait perhaps one or two days. It is hoped something will be done to remedy this evil, and a competent plumber placed at the head of the office. As matters are now, the inspectors have everything their own way and have a go-as-you-please air about them, and at the best of times are not over courteous.

Another matter which should be looked into, is the granting of certificates on completion of a job of plumbing. The plumber places his work in position, it is duly tested by the city inspector and found all right and passed, but some other contractor has put in the drains, which are found to be not correct. The plumber is refused a certificate because of defective drains which he has had nothing to do with, and is not in any sense responsible for. Certainly the plumber should not be held responsible for work he never performed and over which he has no control. Then on what grounds is he refused a certificate? Perhaps these overworked inspectors can give light on this matter, and much oblige,

A SUFFERER.

CHANGES DESIRED IN THE PLUMBING BY-LAW.

THE Toronto Master Plumbers' Association at their last meeting appointed Messrs. W. J. Burroughes, J. Ritchie and A. Fiddes a committee to wait on the City Engineer to urge some changes in the Plumbing By-law. One of the chief amendments asked for will be the location of the fresh air inlets. It is understood that many of the plumbers have found that this pipe, as it is generally located, is a nuisance and an eyesore, that it should be located not less than ten feet from a window or any opening in a building, and where houses or other buildings are so located that this cannot be accomplished, the pipe should be carried up above the roof of the house on the inside. It is claimed this can be easily accomplished by placing the pipe inside of a partition in the building or set in a recess in the wall left in the brick work for that purpose.

The Medical Health Officer for the city of Toronto has issued instructions to all master plumbers that every charcoal heater in use by them must be connected with a chimney, as the gas given off is injurious to the health of the workmen.

SANDY FOUNDATIONS.

A PROCESS of preparing foundations has been patented by F. Neukirch, of Bremen. Its object is to make loose sand firm and resisting as solid rock. At present the universal method of doing this work, if under water, is to remove all loose material and then make a beton or other similar sub-structure. The process under consideration, which is only of use where the materials are fairly clean siliceous or calcareous sand, aims at consolidating the grains by covering them with a film of cement, which is forced into the spaces between the particles by compressed air, steam, or water under pressure. Sheet piles are employed to prevent the spreading of the cement over more ground than is necessary. The system has been largely used in the harbor of Bremen, and is to be tried in preparing dry foundations.

THE LIMITING PRESSURE UPON FOUNDATIONS.

VERY little data is available as to the limiting pressure to which foundations may be subjected, says the *Mechanical World*. Since the safe load will vary considerably with the nature of the soil, the only satisfactory method of determining this important factor is by direct experiment.

In the erection of the weighty and lofty structures on the Champ de Mars, in Paris, in connection with the exhibition, experiments were conducted with this object in view, for the purpose of determining the size of foundations.

The method adopted was to level a large surface of ground, and place four rectangular blocks of cast iron, one foot eight inches square, so disposed as to form corners of a square, the distance apart being 11 feet 8 inches from centre to centre. These blocks were bridged by girders of T iron, and these were then loaded with the same until a total weight of 14,923 pounds was reached, when a settlement occurred. The pressure on the ground was 7,311 tons per square foot.

During the night the settlement increased about three-quarters of an inch. The load was increased next day to 200,776 lbs., when some of the corner blocks had sunk out of sight, leaving the girders on the surface of the soil. It was found by these experiments that the soil was capable of resisting a load equivalent to 5.43 tons per square foot.

When the load reached 7.31 tons, settlement took place, and the ground was incapable of supporting a load of 8.14 tons per square foot.

MANUFACTURES AND MATERIALS

THE QUALITY OF ROOFING PLATES.

PHILADELPHIA, March 6th, 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—In bringing out our roofing plates stamped with the brand and thickness, and doing away with the waster sheets of same, it was the object of this house to put upon the market, not only an article which the architect could specify with security, but also one that would enable the property owner to receive what he was willing to pay for. There is to-day a difference of almost 100 per cent. in price between the poorest and the best roofing plate in the market. Nearly every brand is imported of two different qualities; that is, good plates and bad—or wasters. It is absolutely necessary in these days of competition that specifications should be drawn as to hold each roofer up to his contract. Even the soldering of a roof is such an important matter that the roofer who uses soldering irons weighing but four pounds to the pair cannot possibly apply the amount of solder to the square that should be used; consequently heavy soldering irons should be used so as to allow the solder to soak well into the seams where a first-class job is wanted. The very best material if not properly put on would make the roof a failure. Our object is to assist the architect all in our power, and with this idea in view we have drawn up specifications for both a flat and standing seam roof, of the two sizes of plate which we think will be an aid to every architect who desires to use tin for roofing.

The specifications that we have drawn up are simply intended as a *reference* for the architects, and while we have inserted our brand of "Merchant's Roofing" in same, yet any brand which the architect may choose to use can of course be written therein. This formula has not been written by us with any intention of dictating to the architect, but rather to assist him in specifying for a roof that will last, as it should, for years, whilst the majority of tin roofs put on to-day will not last five years before repairs commence.

Again the present competition amongst roofers is such that a roofer who desires to make a first-class job and use good material stands but very little chance of obtaining the contract unless he is better protected by the architect in his specifications.

Yours very truly,

MERCHANT & CO.

The Drury Cove Lime Co., at Drury Cove, N. B., expects to manufacture about 75,000 barrels of lime per year.

There is an unconfirmed rumor to the effect that the Melbourne, Que., slate quarry has been sold in England for $20,000, and that the new proprietors will work it.

The question is often asked whether creosote preserves the color as well as the wood when used in an exterior stain. There seems to be no doubt that it does so. Probably the reason is that the low forms of organism and fungi, which are so fruitful in causing the blackening in oil paints and stains are prevented by the addition of creosote, which is a strong germicide.

An Ottawa despatch says: The application made by Mr. Skinner, M. P., to the Government in regard to decreasing the duty on lime has, it is understood, been favorably entertained. It has been decided therefore to decrease the duty on the article from 20 cents per barrel to 10 cents per barrel, thereby making the duty the same as the American. The lime industry in the maritime provinces has largely increased of late years, New Brunswick alone manufacturing over 300,000 barrels per annum.

A company is being established at Kingston, Ont., to manufacture Portland cement. The present capital required is $50,000. The profit on an establishment, making fifty barrels per day, is estimated at 14 per cent., making due allowance for amortisation. The importation of Portland cement into the Dominion is about 100,000 barrels a year, on which the duty is forty cents a barrel. The enterprise may, under favorable circumstances, take up the manufacture of firebrick. There are said to be within a few miles of Kingston, sandstone equal to any from which ganister brick is made, dolomite, from which magnesian brick is made, plumbago, for lining furnaces and making crucibles, in fact, all kinds of refractory materials, except fire clay proper.

Despatches from McKeesport, Pa., announce that the brick manufacturers of that city and Pittsburgh are becoming interested in a patent chemical process for making brick without the usual burning which has always proved necessary. The process is that of a western man, and it is claimed that the brick can be made and hardened in two days at a cost of two dollars per thousand; or at one half of the average price per thousand that stock brick are made in yards where brick is burned. Another feature is, that the process will permit the brick to be made in all colors, and that the hard article for street improvement can also be made. A number of McKeesport capitalists are interested in it, and should it prove what it is claimed, they will locate a large plant to manufacture by this process.

The Barnum Wire and Iron Co., of Walkerville, informs us that they have in press and will publish about the first of April, a very complete and handsome catalogue.

CONTRACTS

CONTRACTS OPEN.

ALMONTE, ONT.—Bennett Rosamond will build a $20,000 residence here.

DESERONTO, ONT.—The post office here is to be enlarged and improved.

ST. VINCENT, ONT.—Tenders are asked for the erection of a brick church at Snider's corner.

WELLAND, ONT.—The Council has petitioned the Government to build a post-office and custom house here.

FOREST, ONT.—The High School Board will ask the town council for $7,000 to buy a site and erect a high school building.

SUDBURY, ONT.—Messrs. H. H. Vivian & Co., limited, of London, Swansea, and Birmingham, Eng., are about to erect blast furnaces here.

MONTREAL, QUE.—A committee of the Board of Trade are prospecting for a suitable site for a new building. Nothing has yet been decided upon.

BARRIE, ONT.—Tenders are asked by the chairman of the water-works committee for the franchise and construction of a system of water works in this town.

BOWMANVILLE, ONT.—A by-law has passed the council to be submitted to the freeholders of this town on March 31, authorizing a loan of $8,500 for the erection of a new high school.

WEST TORONTO JUNCTION.—The Disciples congregation are having plans prepared for a new church to be erected on the corner of Keele and Annette streets, at an estimated cost of $3,000.

LONDON, ONT.—The Ontario Government has agreed to contribute $10,000 towards the cost of constructing a six-foot sewer on the bed of Carling's Creek. It is expected that the C. P. R. will also pay half the cost of a sewer through their freight yard, a distance of 1,600 feet.

HAMILTON, ONT.—Hannah street Methodist church is to be enlarged and improved by the addition of a transept at the south end, and a Sunday school on the west side, at a cost of about $8,000.—The Sewers Committee contemplates spending this year $10,000 on the east end sewer, $10,000 on the west end sewer, and $10,000 in general repairs.

KINGSTON, ONT.—It is proposed to improve the fire alarm system at the cost of $4,000.—A deputation of aldermen will inspect the engine houses in western cities for the purpose of obtaining information for use in planning the new engine building here.—The Board of Trustees of the general hospital has granted a site on its grounds for the proposed Women's Medical College building.—Tenders will be asked in a few days for the erection of a new wing to the general hospital.

TORONTO, ONT.—A sub-committee has reported in favor of re-building St. Patrick's Market, and the Council will be asked to vote $20,000 for the purpose.—The Water Works Superintendent recommends that the four million gallon pumping engine be replaced by an eight million gallon engine of the latest improved pattern.—The Parks and Gardens Committee of the city council has determined to advertise for tenders for the construction of Island wharves pending an arrangement being arrived at with the Dominion Government.—A project is on foot to erect an Industrial Institute for Girls. West Toronto Junction and Pickering have been suggested as suitable locations. The city council has been asked to contribute $12,000 to the building fund. The Provincial Government will also be asked to assist. Mr. Beverley Jones can give information. The following building permits have been issued: Elener Henderson, pr. 2 story and attic bk. dwells., n. s. St. Joseph St., w. Yonge, cost $7,000; C. N. Smith, alterations to 11 D'arcy St., cost $1,000.—Sewers are recommended on Wilton crescent, from Pembroke street to George street, cost $1,068; on Margueretta street, from Bloor street, northerly, cost $2,332, and on Markham street, from London street to Johnston avenue, cost $2,500; Irving and Franklin avenues; Kensington avenue and the Davenport road.—Cedar block pavements on the local improvement plan are recommended for Gallendar street, from Queen street northerly, cost $2,450; for Euclid avenue, from Bloor street to Johnston avenue, cost $5,775, and on Palmerston avenue, from Bloor street north to the tracks, at a cost of $11,550.—The Committee on Works will ask for tenders for scoria and asphalt pavements on Ontario street. Asphalt pavements will also be laid on Ontario street, from Carlton to Howard streets, and on Jordon street.

CONTRACTS AWARDED.

ST. HYACINTHE, QUE.—Messrs. Paquette & Godbout, of this town, have been awarded the contract for the wood-work and decorations for the annex to the Church of Notre Dame, at the price of $10,000.

KINGSTON, ONT.—Contracts have been awarded for water works supplies as follows: Lead pipe, W. C. White, Montreal; stop cocks and fifteen valves at $16.50 each, Stevens and Burns, London; fifteen hydrants, Kingston Foundry, at $31 each.

BIDS.

TORONTO, ONT.—The following were the lowest tenders received for the erection of a fire hall on Ossington Ave.: Brick work and masonry, Wickett Bros., $5,223; carpenter work, Brady & Bell, $3,310; plumbing and heating, Purdy & Co., $1,830; painting, Taylor & Wheeler, $394; slating, W. D. Hutson, $434; galvanized iron work, Thomas Plunkett, $150; iron work, Aikenhead & Crombie, $2,733.52. No tender for plastering was received, but $400 is estimated for this work, and when this has been added, along with $750 for architects' fees, a total of $15,234.52 is reached. To meet this there is an appropriation of $10,000 and the proceeds of the sale of a lot on Rolyat street, estimated at $3,600, so that an additional appropriation of $2,000 will be required to complete the building.

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CONSTRUCTION · SANITATION · ENGINEERING

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—THE—
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ADVERTISEMENTS.
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EDITORS ANNOUNCEMENTS.
Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The Ontario Association of Architects has appointed the "Canadian Architect and Builder" its official paper.

The publisher of the "The Canadian Architect and Builder" desires to ensure the regular and prompt delivery of this Journal to every subscriber, and requests that any cause of complaint in this particular be reported at once to the office of publication. Subscribers who may change their address should also give prompt notice of same, and in doing so, should give both the old and new address.

A HAMILTON paper recently published an article from a correspondent which depicted in a truly alarming manner the dangers resulting from defective plumbing and insanitary surroundings generally. If our memory is not at fault, the writer estimated that 20 per cent. of the deaths were the result of this cause. Whether as a mere coincidence, or as a result of the article referred to, we noticed a few days later the appointment of Mr. J. M. Byren as Building and Plumbing Inspector. We hope that this commendable step will be followed in due time by the abolition of the dual position and the appointment of an inspector of buildings and an inspector of plumbing.

WE are pleased to observe from the proceedings of the annual meeting, that the Engineering Society in connection with the School of Practical Science, Toronto, is prospering. There were seventeen additions to the list of life members during last year, and twenty-nine additions to the list of ordinary members. The papers read and discussions held cover a wide range of subjects, and will be published in pamphlet form. A new and valuable feature is the establishing of a circulating library. The officers elect for the current year are: President—J. K. Robinson; Vice-president T. R. Deacon; Recording secretary C. C. Fairchild; Corresponding secretary G. E. Sylvester; Treasurer W. A. Lea; Librarian A Lape; Third year representative J. E. A. Moore; Second year representative—E. E. Langley.

ABOUT a year ago reference was made in these columns to a resolution passed by the Committee on Works and approved by the City Council of Toronto, providing that all sewers of fifteen inches diameter and upwards should be constructed of brick. We pointed out at the time that for small sewers, vitrified pipe was to be preferred to brick, its smooth interior facilitating the flow of sewage matter, its durability when properly laid being beyond dispute, and the cost of construction being substantially less than in the case of brick. In the absence of any satisfactory explanation of their action, people were unkind enough to say that the aldermen were simply throwing a bait to catch the votes of the brickmakers and bricklayers. However this may have been, we are credibly informed that $11,000 above the cost of pipe sewers was expended on the construction of small brick sewers last year. The City Engineer now recommends that the resolution be rescinded on sanitary, economical and other grounds.

THE Board of Works of the city of Toronto has been trying the experiment of constructing public works by day labor under the supervision of city officials instead of by contract. It is not surprising to learn that the results in the case of works of any importance, have not been satisfactory. As an instance, a bridge for the construction of which a tender of $6,000 was received, cost by day labor, $8,349, a loss to the city on a single contract of $2,349. The City Engineer expresses the opinion that were the city to purchase the necessary appliances and enter upon the construction of public works on an extensive scale, the work could be done as cheaply if not cheaper by day labor than by contract. This might prove to be the case for a time, but such a system would be well-nigh certain to open the door for abuses which would eventually make the undertaking a costly one to the citizens. It is proverbially true that economy does not enter into the practice of the city's employees to the extent to which it appears in the contractor's methods of conducting his business. While no doubt there are in the city's employ foremen and inspectors of undoubted faithfulness to the interests placed under their charge, it would be found difficult to secure a sufficient number of such persons to manage successfully and with the greatest economy the expenditure of the large sums annually placed at the disposal of the Committee on Works.

THE appointment of an inspector or inspectors of scaffolds is still engaging the attention of a committee of the Toronto city council. The City Solicitor has been asked for his opinion on the following points: "Will the city be held liable in the event of a workman being injured by reason of a scaffold giving way after the said scaffold has been approved of by the city inspector? Will a claim against a contractor for injuries received by a workman in consequence of an accident occurring by the giving way of the scaffold which has been constructed according to the specification be in any way prejudiced?" The city authorities do well to satisfy themselves as to where the responsibility for accidents would rest under a system of municipal inspection, before they decide to put such a system in

operation. The very fact of their anxiety to learn the legal bearings of the case, is, however, a proof that they do not hope to put a stop to scaffolds falling or injury to workmen in consequence by means of the proposed system of inspection. The question then arises, if the inspection is not to be thorough and effective in protecting workmen from injury, of what use will it be? Evidently, little or none whatever. Without being informed as to the legal aspect of the case, we hold to what seems to us the common-sense opinion that if the city appoints inspectors to see that all scaffolds erected are of proper material and securely put up, the contractor is entitled to be freed from all reponsibility, and the claims for damages for any accidents which might possibly occur, should be presented to, and if well-founded, paid by the city.

A FEW days ago a structure erected for the protection of pedestrians in front of a building in course of construction on Yonge street, Toronto, collapsed. Fortunately, the attention of a policeman had a few moments before been drawn to its unsafe condition, and placing himself at the entrance he prevented persons from passing under it. But for this, serious injury if not loss of life must have been the result. The unsafe character of this and similar structures in different parts of the city has long been observable, and should accidents result, the responsibility will rest with the City Commissioner's Department. We presume that from this department emanated the by-law compelling the erection by contractors of these structures, and the City Commissioner has a right to see that a device intended for the protection of the public shall not be so carelessly put up as to be itself a cause of danger.

WE have frequently called attention to the manner in which the by-laws supposed to govern the erection of buildings in the cities of this country are disregarded. Nothing like a determined attempt is made to enforce compliance with the law, and unsatisfactory results follow as a natural consequence. A Montreal alderman expressed the opinion the other day that the duties of building inspector and boiler inspector might be performed by one man. He thought the building inspector was of very little use, for buildings were going up all over the city in contravention of the by-laws. It is not improbable that in cities like Montreal and Toronto the work is more than a single inspector can properly perform. If this be the case, he should be given the necessary assistance to enable him to perform his duties efficiently. Perhaps duties are saddled upon him which do not properly belong to his position, and which take up time which ought to be given to enforcing the building regulations. If so, all such obstacles should be removed from his path. It ought to be sufficiently evident that in the cities mentioned the duties of the position, if honestly fulfilled, are sufficient to task the energies of a single inspector. Therefore the proposal to add to these duties those of an inspector of steam boilers is simply absurd, more especially in view of the fact that the necessary qualifications for a good building inspector will not apply to an inspector of steam boilers. A very great improvement on the present state of things in all our cities would be the honest carrying out of a system under which a correct record should be kept of every building erected within the city limits, and it would be impossible for the work of construction to begin without a permit from the inspector of buildings.

WE print in the present issue the Act passed by the Legislature of Ontario incorporating the Ontario Association of Architects. The preamble states the objects to be "the better protection of the public interests in the erection of public and private buildings in the province of Ontario," and "to ensure a standard of efficiency in the persons practising the profession of architecture in the province." These objects would have been attained had the Bill not suffered emasculation in its passage through the House. In the form in which we present it to our readers, and in which it will be placed on the statute books, it can scarcely be said to afford much protection to the public or to ensure a standard of architectural efficiency. The Bill as originally presented, constituted it a punishable offence for any person to call himself an "architect" who was not registered as such under the Act. By substituting for the title "architect" the words "registered architect" the Legislature defeated one of the main purposes of the Bill, viz., to make the word "architect" a guarantee of the capability of the person using it. Notwithstanding that the Act in its present shape is in a great measure disappointing to the Association, it should be considered as one step forward in the direction of securing for the architectural profession the recognition and respect which is its due, inasmuch as it enables the public to distinguish between the qualified and unqualified practitioners. It is well that this view should be taken, and that every member of the Association should register as a "Registered Architect" under the Act. The Association will then be in a position to put forth united effort at future sessions of the Legislature to have such amendments made in the Act, as will make it effective in accomplishing the objects of its promoters.

FAME and fortune are awaiting the individual who shall perfect a method of heating buildings, especially residences, at less cost than is entailed by the present expensive systems. The amount of money annually expended by the people of this continent for fuel, would we doubt not, prove truly startling were the figures at hand. Let us endeavor to arrive at a rough estimate of the coal consumed every year in Toronto residences. Placing the population at 180,000, and supposing the average family to consist of five persons, we have, say, 36,000 families. These might be divided into three classes, viz., poorest class, 15,000; middle class, 12,000; highest class, 8,000. A fair approximate estimate of the annual cost of fuel to these three classes would, we think, be about as follows: highest class, $150; middle class, $75; poorest class, $40. Basing our estimate on these figures, we have a total expenditure of $2,700,000 for fuel in the residences alone of the city of Toronto. These figures represents, perhap, less than one half the total expenditure in this direction were public buildings, factories, etc., to be taken into the account.

We are pleased to observe that successful experiments are said to have recently been made, and a patent based thereupon applied for, in the United States, for the purpose of utilizing electricity for heating purposes. The plan is said to provide for a central plant but the manner in which it is proposed to convey the heat to the buildings is as yet unrevealed. In the building to be heated it will be distributed by a system of pipes similar to the furnace pipes now in general use, except that no hot air will be allowed to escape until it is distributed by radiation into the desired rooms. About 75 per cent. of the heat from furnaces is lost before it can be distributed where it is wanted. By the proposed system, if successful, none of the heat will escape until it is distributed through registers into the room, and this saving of heat will be so directly in the path of economy that the inventor claims that electricity can be used for heating houses wherever coal is used, and that it will cost no more than coal, and he thinks considerably less. The purchaser of electricity by this plan would pay only for what he uses. When the desired temperature is attained in a room the current can be completely closed or reduced, as may be desired, and a meter will record the amount of electricity used. A spring on the house registers will close the electric current, and up-stairs registers can be closed by a device on the ground floor. The results of this and other experiments designed to give us a more economical method of heating will be watched with much interest.

THE subject of street paving is at present engaging much attention throughout the American continent. Investigations are taking place in many cities to determine the wearing qualities of various kinds of paving materials, and the methods of construction which are calculated to ensure the best results. So great, indeed, is the interest aroused in this subject, that a street paving exhibition is to be held shortly at Indianapolis

Ind., to which four hundred cities have been invited to send representatives. Papers will be read by experts, and the merits of various types of practice discussed. Cedar blocks were extensively used a few years ago, and in the case of streets carrying only light traffic, they have proved, when properly laid, to be very satisfactory. On the other hand, their unfitness for streets bearing heavy traffic has been clearly demonstrated. Less than ten years ago the three principal streets of the City of Toronto, viz., King, Queen and Yonge streets, were paved with cedar blocks. This pavement is now worn out, and must at an early day be taken up. It is due to the status of the city and the health of the citizens, as well as necessary from the standpoint of economy, that these streets should be paved in the most durable and satisfactory manner possible. The City Engineer has been asked to investigate and report upon the material which should be used, and the method of construction.

This choice of materials for a first-class pavement appears to have recently become narrowed down to Medina stone, brick and asphalt. First-class Medina stone costs in Buffalo $4 per square yard; in Cleveland, $3.50; and in Columbus, with a ten inch broken stone foundation, $3.25. It is said to make a very durable and comparatively smooth pavement; not being so hard as granite, is less slippery. Brick pavement has been laid to a considerable extent in the cities of Ohio during the last six or seven years, and appears to be rapidly growing in favor. In the city of Columbus, Ohio, 21 mile of streets have been paved with this material. The brick here used is made of mica shale mined about fifty miles from the city, ground to a fine flour, sifted, mixed with water, pressed, dried and thoroughly vitrified by burning. The cost, including a foundation of ten inches of broken stone, ranged from $2.25 to $2.50 per square yard. Asphalt is already in use on several of the streets of Toronto and Montreal, and appears likely to give satisfactory results. It is, however, open to the objection of being very slippery. The City Council of Detroit recently appointed a Committee to report on the subject of pavements, and as a result of a very full and careful investigation, the Committee made the following recommendations for street paving in Detroit: "1. That no pavements in future be laid in Detroit without a 6-in. concrete foundation and 4-in. tile drain under the curb. 2. That all pavements except asphalt have not less than a 2-in. cushion coat of sand on the concrete. 3. That curb stones, whether of Medina or Berea stone, be not less than 4 ft. in length, not less than 18 ins. in depth and 4 or 5 ins. in thickness. 4. That first-class Medina stone with filled joints be used on all very heavy traffic streets. 5. That asphalt be used to pave the main thoroughfares where the traffic is not too heavy, and on fine residence streets, and that brick be used on other residence and suburban streets. 6. That where wood pavements be used, the joints shall be filled with fine gravel and cement, making the surface water-tight. 7. That Medina stone, brick or asphalt be used for all re-paving. 8. That no pavement of any kind be laid hereafter without a five years' guarantee. 9. That no paving be done on any street until all water, gas and sewer connections have been made, and that a proper ordinance to enforce this recommendation be adopted and strictly enforced."

We observe that the town of Chatham, Ont., has decided to test the brick pavement, provided a suitable quality of brick can be obtained. We would suggest that, in the time which will elapse before the taking up of the cedar block pavements, the Board of Works of the city of Toronto should also make a test of the wearing qualities of brick under heavy traffic. Should it prove satisfactory, the material could no doubt be manufactured within the Province. We have been told on what appears to be good authority, that the city could effect a considerable saving in the cost of asphalt paving by having the necessary concrete foundation laid under the supervision of its own engineers, and only letting by contract the work of laying thereon the 2½ inches of asphalt surface. We observe that the City Engineer has been asked to report upon the advisability of adopting this course.

FOR the past few weeks all interested in building work in Toronto have been anxiously watching the movements of the Labor Unions on one side, and the Master Builders' Association on the other, and all have been wishing to see some sign of an agreement which would save the city building interests from being so demoralized that the season now upon us will be practically lost. Up to the hour of going to press the breach seems to widen, and we desire to cry halt! We do not wish to undertake in this connection a lengthy discussion or comment covering all the complicated questions arising out of the conflict between capital and labor. The position of this Journal in regard to strikes and their consequences may be very briefly stated. We consider that strikes, as brought about and managed during recent years, are in almost every instance an unmitigated evil. As a consequence of having stated this opinion, we do not wish to be misunderstood by any member of the Labor Unions as opposing the advancement of his welfare in the least. We believe there is a good and legitimate field for the work of Unions in which the members may properly and successfully seek their own advancement, and would welcome any measure calculated on a right basis for the betterment of all wage workers, but the only basis we are prepared to admit as right for such efforts to rest upon is the old and solid one of supply and demand, coupled with the individual qualifications of one man compared with others in the same branch of industry.

Strikes are to the social or industrial life what war is to the life of a nation—simply the substitution of barbarous methods, and in many cases even brute force, for calm reason in the settlement of differences always arising. And it must indeed be an extreme case and one seldom seen which will justify even an ordinary strike. Any real mechanic should feel himself qualified to compete with the world in selling his labor in open market, and when he places himself under obligations to lay down his tools and go out on strike at the dictation of any number of men and against his own wishes and judgment, he simply places the best interests of himself and family in other hands than his own, and gives away what should be the dearest right of every true man. We are aware that human selfishness is very great, and if labor could make every strike win and secure every increase demanded in wages, it would only be satisfied when there was nothing left to demand, and the industries would be literally struck to death. On the other hand, capital in its own selfish interests would only stop the downward pressure on wages when it had reduced all labor to the level of slavery and wages were barely sufficient to sustain life. That is the tendency of capital if it were all controlled by one selfish individual, or under the too common system of combination. But happily the division of capital into many hands sets all this selfishness to pulling in different directions, and if left to work in its natural course of competition, acts as a check upon itself and a remedy for the dangers which would otherwise exist. And so the conflict goes on.

Labor unions as a whole and as individuals, seem to lose sight of many of these simple truths, and act on the assumption that force is their only resort. Not that we would say that labor union men are without reason or intelligence; but we do say that labor unions are not always controlled by the intelligence they possess, and strikes are rarely brought about except by some matter trifling in itself perhaps, and acted on more from bad temper than from the desire to further the general welfare of the community. There are good mechanics now out on strike in Toronto against their own judgment, because a majority union vote says "strike," and these men will and do tell us that they prefer to remain out and let their families and themselves take the consequences, rather than to face the treatment they would otherwise receive at the hands of the unions. Shame on such ideas of manhood! Count up the cost. Grant for the sake of argument that wages have been forced, up in some cases by strikers, and that the unions carry the point in the present struggle. Still, if considered in the light of a long enough period of time and as affecting all the industries it reaches indirectly, there is always an irreparable loss to the business prosperity of

any city or country, and this must eventually react to the detriment of the strikers, be they engaged in whatever pursuit. It is perfectly safe to say that the increase of wages gained at the loss of weeks and months of solid working time is no more a profit to the workingmen in the long run, than that the reduction of taxes through license fees from the liquor traffic is a profit to the community after paying the costs and losses entailed by its existence.

A solution of the problems in connection with the adjustment of wages must be recognized as being as difficult as those pertaining to the science of political economy, and a solution which every one will accept as correct and satisfactory may be considered to be well nigh impossible. But some plan for the avoidance of these periodical convulsions in our industrial life we believe must and will be found, however slow its development may be. What we would propose and appeal most earnestly to every man to strive for, is some arrangement of the present difficulties that will set and keep the wheels and machinery moving until the happy condition shall have been brought about when these disputes will be a thing of the past. To that end, and as meeting the immediate necessities of the case, we would suggest for the consideration of labor union men, master builders and every business man in Toronto, that a committee be appointed, to sit as a Board of Arbitration between the building trades and the employers for the city of Toronto, this committee to settle the present difficulty and decide what shall be the standard of wages for the years 1890 and 1891, and the same committee to remain organized for two years and readjust the scale of wages for the years 1892 and 1893, reporting its decision of same to the Trades Unions and Master Builders' Association on or before Jan. 1st, 1892—the same course to be pursued bienially thereafter. The membership of this Board of Arbitration should be one delegate from each branch of the building trades and one from the Building Laborers' Union, one delegate from each branch of the Master Builders' Association, and an equal number of architects, to be delegated by the Ontario Association of Architects; making in all about 25 members. Let this Board establish its own rules of procedure, except that the vote of a majority of all its members should decide any question under consideration. After settlement of the questions now in dispute, they would be prepared to receive information or complaints tending to furnish light needed for the next biennial regulation of prices. After that, a new selection of delegates could be made every two years. We believe that the Trades Unions, Master Builders and public generally could and would have confidence in such a body, and that it could be made successful not only as a regulator of wage rates, but could also be made a sort of Court of Appeal for the settlement of any differences now usually ending in a strike. The trades and masters would be evenly balanced and no doubt prepared to protect their respective interests, and the position of mediators would devolve upon the architects. We feel sure that the Master Builders would be satisfied to place themselves in the hands of such a Board and we can see no reason why the Trades Unions should not have all necessary confidence in its fairness and intelligence. Contractors are constantly placing themselves in the hands of architects in a way that involves large interests, and they know that every true architect will endeavor to see that they as well as the proprietor, get fair play. Surely the workmen ought to be ready to have as much confidence as their employers in the reasonableness of the architects. This is one of several apparently feasible plans, which might be suggested for the adjustment of such disputes. For instance, three Superior Court judges might constitute a Board of Arbitration to whom each party to the dispute would state their case and in accordance with whose ruling on all the points submitted, the difficulty would be settled.

After all it is not so important that the Trades Unions and Master Builders shall agree between themselves, as it is for them to agree in such a way and on such terms as the public will approve. Strikers may stop works already under way, but when they want new works started they must wait for the public to give the orders according as they are satisfied with needs, prices, etc. Who will be the first to move in the right direction? Do the Trades Unions and Master Builders' Association really want peace and plenty, or do they want to continue a most deplorable contest just to see which organization is the strongest?

THE ONTARIO ARCHITECTS' ACT.

WHEREAS it is deemed expedient for the better protection of the public interests in the erection of public and private buildings in the Province of Ontario, and in order to enable persons requiring professional aid in architecture to distinguish between qualified and unqualified architects, and to ensure a standard of efficiency in the persons practising the profession of architecture in the Province, and for the furtherance and advancement of the art of architecture;

Therefore Her Majesty, by and with the advice and consent of the Legislative Assembly of the Province of Ontario, enacts as follows:—

1. This act may be cited as "*The Ontario Architects' Act*."

2. All persons who shall cause their names to be registered under the provisions of this Act, shall be, and are hereby incorporated under the name and style of "The Ontario Association of Architects," hereinafter referred to as "The Association."

3. The Ontario Association of Architects shall be a body corporate by the name aforesaid, having a perpetual succession and a common seal, with power to acquire, hold and dispose of personal and real estate, for the purpose of this Act, and to sue and be sued, in the manner usual with such corporations.

4. Every person registered under the provisions of this Act, shall be a member of the said association.

5. There shall be a council of management of the said association, to be appointed in the manner provided for in this Act, and hereinafter referred to as "The Council."

6.—(1) The council shall be composed of nine persons, who shall in the first instance be appointed by the Lieutenant-Governor in Council within one month after the passing of this Act, and shall be British subjects, both residing and practising the profession of architecture within the said Province for at least ten years before the passing of this Act. The members of said council so appointed shall meet in the city of Toronto, in the county of York, for the purpose of organization within one month after appointment, at such time and place as may be directed by proclamation in the *Ontario Gazette*.

(2). Any five members of the council shall form a quorum.

7. The members of the council so appointed by the Lieutenant-Governor in Council, shall hold office for the following terms respectively: the first three names mentioned for the term of three years; the second three names mentioned for the term of two years; the third and last three names mentioned for the term of one year.

8. All subsequent members of the council shall be elected by ballot, in such manner as may be provided for by the by-laws of the association, at the annual meeting of said association, or at a special meeting called for that purpose; and the member, or members, obtaining the greatest number of votes shall be declared elected.

9. No person shall be eligible for election to the council, or qualified to fill any vacancy thereon, or to vote for any member thereof unless duly qualified under the provisions of this Act and the by-laws of the association.

10. All elected members of the council shall hold office for the term of three years, except as hereinafter provided, and five shall form a quorum.

11.—(1) In case of the resignation or death of any member or members of the council not exceeding four, the other members of the council shall have power to fill all vacancies so caused, until the time of the holding of the next annual meeting, provided said annual meeting is not to be held within a period of three months of the occurring of such vacancy or vacancies.

(2) In case of the resignation or death of five or more members of the council, the president or vice-president of the association, or in case of their, or either of their default for a period of ten days, any five members in good standing, shall have power to call a special meeting of the association upon a notice of not less than ten days, for the purpose of filling the vacancies so caused.

(3) In case of an election to fill the vacancies referred to in sub sections 1 and 2, the member receiving the greater number of votes shall be considered the member elected to fill the vacancy which will require the longer term to expire, and so on until the vacancies are filled.

12. In case of any doubt or dispute as to who has or have been elected a member or members of the council, or as to the legality of the election of any member or members of the council, it shall be lawful for the other duly elected members to be, and they are hereby constituted a committee to hold an enquiry and decide who, if any, is, or are, the legally elected member or members of the council, and the person, or persons, if any, whom they decide to have elected shall be and be deemed to be the member, or members legally elected, and if the election is found to have been illegal, the said committee shall have power to order a new election.

13. Meetings of the association and the council shall be at such times and places as may be fixed by the by-laws of the association or council respectively; and in the absence of any rule or regulation as to the summoning of meetings of the association, or of the council, it shall be lawful for the president, or in the event of his absence or death, for the registrar to summon the same at such time and place as to such officer seems fit, by circular letter to be mailed to each member.

14. In the event of the absence of the president from any meeting, either of the vice-presidents, or in their absence, some other member to be chosen from among the members present, shall act as president.

15. All questions submitted to the association, or the council, shall be decided by a majority of the members present, not being less than five in number in case of the council, and twenty in case of the association.

16. At all meetings the president for the time being shall have only a casting vote.

17. There shall be paid to the members of the council such fees for attendance, and such reasonable travelling expenses as may be fixed by by-law passed by the association at the annual meeting.

18. The council shall annually elect from among its members a president and two vice-presidents, and shall appoint a registrar, treasurer, solicitor and such other officers as may be necessary for the working of this Act, who shall hold office during the pleasure of the council, and who shall, as well as being officers of the council, hold the like position as officers of the association.

19. The council shall have power to fix by by-law the salaries or fees to be paid to such officers, and to the board of examiners hereinafter appointed.

20.—The council shall have power and authority;

(1) To appoint an examiner, or examiners, for the purpose of ascertaining and reporting upon the qualification,

(a) Of all persons who shall present themselves for admission and enrolment as students at any of the matriculation, preliminary, intermediate or final examinations.

(2) To make all necessary rules, regulations and by-laws respecting the admission and registration of students, the periods and conditions of study, and the enrolments of architects as members of the association and all matters relating to the discipline and honor of the profession.

(3) To regulate and fix the annual admission fees payable by architects and students, and to make all rules, regulations, and by-laws, necessary for the proper working or carrying out of the provisions of this Act.

(4) To enact by-laws as to the terms upon which it will receive the matriculation or other certificates of colleges and other institutions not in the Province of Ontario.

21. Any student who has matriculated in arts in any university in Her Majesty's dominions, or in the Ontario School of Practical Science, shall not be required to pass the preliminary examination.

22.—(1) Any person practising the profession of architecture within this province, on the coming into force of this Act, may become a member of the association, by causing his name to be registered with the registrar of the association within three months from the appointment of such registrar, and by paying to the registrar such fees as may by by-law or otherwise be made payable in that behalf.

(2) In case any such person as aforesaid omits to be registered within said period of three months, through absence, illness, or inadvertence, such person may, at the discretion of the council be admitted to enrolment as an architect.

23. Any other person who applies for admission to registration as an architect after the coming into force of this Act, shall not be less than twenty-one years of age, and shall have served as a student not less than five years with a principal or principals entitled to register under this Act, or with any other principal or principals approved by the council and have passed such qualifying examinations as may be required by this Act.

24.—(1) All students desirous of entering the profession of architecture shall be presented by a member of the council, and shall cause their full names to be entered with the registrar, and shall pay such fees, and submit to such examinations as shall be necessary in that behalf; provided that any person who, before the passing of this Act, was entered as a student for a shorter term than five years, but not less than three years, with a principal or principals qualified to be registered under this Act, or with any other principal or principals, approved by the council shall, on serving the full term of his indenture and passing the examinations prescribed by the council, be entitled to register under this Act.

(2) Notice and evidence of existing studentship shall be given to the registrar within six months after the passing of this Act, and shall be accompanied with such fee as the council shall from time to time direct, and with properly executed articles of indenture for the said term.

(3) Any person who has graduated from the Ontario School of Practical Science shall be required to serve only three years as a student, one of which three years may be served during the vacations of such school.

(4) Upon and after the passing of this Act, students shall serve such term as is required to be served by the provisions of this Act, under indenture, to a registered architect, which indenture and any assignment thereof with affidavit of execution thereto attached shall be filed with the registrar upon payment of such fee as the council may by regulation direct.

25. From and after the first day of July, 1890, no person shall be entitled to take or use the name or title of "Registered Architect," either alone or in combination with any other word or words, or any name, title, or description, implying that he is registered under this Act, unless he be so registered. Any person, who, after the above date, not being registered under this Act, takes or uses any such name, title, or description, as aforesaid, shall be liable, on summary conviction, to a fine not exceeding $25 for the first offence, and not exceeding $100 for each subsequent offence.

26. The registrar of the council shall, in every year, cause to be printed, published, and kept for inspection at his office, free of charge, under the direction of the council, a correct register of the names, in alphabetical order according to the surnames, with the respective residences, in the form set forth in schedule A to this Act, or to the like effect, of all persons appearing on the general register on the first day of January in every year, and such register shall be called "The Architects' Register," and a copy of such register for the time being purporting to be so printed and published as aforesaid, shall be evidence in all courts, and before all justices of the peace and others, that the persons therein specified are registered according to the provisions of this Act; provided always, that in case of any person whose name does not appear in such copy, a certified copy under the hand of the registrar of the council, of the entry of the name of such person in the register, shall be evidence that such person is registered under the provisions of this Act.

27. If the registrar shall wilfully make, or cause to be made, any falsification in any matters relating to the register, he shall be deemed to be guilty of a misdemeanor, and shall, on conviction thereof, be imprisoned for any term not exceeding twelve months.

28. Any person who wilfully procures, or attempts to procure registration under this Act by making, or producing, or causing to be produced, or made any false or fraudulent representation, or declaration, either verbally or in writing, that he is entitled to such registration, shall be deemed guilty of a misdemeanor, and shall, on conviction thereof, be sentenced to imprisonment for any term not exceeding twelve months.

29. There shall be paid to every registered architect summoned to attend any court, civil or criminal, for the purpose of giving evidence in his professional capacity, or in consequence of professional services rendered by him as an architect, for each day he so attends, in addition to his travelling expenses (if any), and to be taxed and paid in the manner by law provided with regard to the payment of witnesses attending such court the same fee or allowance as is payable to provincial land surveyors.

30.—(1) All fees payable under this Act may be recovered as ordinary debts due to the association, and all penalties under this Act may be recovered and enforced before one or more justices of the peace, in manner directed by the Revised Statutes of Canada, chapter 178, entitled the *Summary Convictions Act*, and any Act amending the same.

(2) Any sum or sums of money arising from conviction and recovery of penalties as aforesaid, shall be paid immediately upon the recovery thereof by the convicting magistrate to the registrar of the council.

(3) Any person may be prosecutor or complainant under this Act, and the council may allot such portion of the penalties as may be expedient towards the payment of such prosecutor.

31. Subject to the other provisions of this Act, all notices and documents required by or for the purposes of this Act to be sent, may be sent by post, and shall be deemed to have been received at the time when the letter containing the same would be delivered in the ordinary course of the mail, and in proving such sending it shall be sufficient to prove that the letter containing the notice or document was prepaid and properly addressed and put in the post. Such notices and documents may be in writing, or in print, or partly in writing and partly in print, and when sent to the council or other authorities shall be deemed to be properly addressed if addressed to the said bodies or authorities, or to some officer of the council or authority at the principal place of business of the council or authority, and when sent to a person registered under this Act, shall be deemed to be properly addressed if addressed to him according to his address registered in the register of the association.

32. All moneys arising from fees payable on registration or the annual renewal fees, or from the sale of copies of the register, or otherwise, shall be paid to the registrar of the council, and by him paid over to the treasurer, to be applied in accordance with such regulations as may be made by the council for defraying the expenses of registration and the other expenses of the execution of this Act, and subject thereto towards the support of museums, libraries, or lectureships, or for other public purposes connected with the profession of architecture, or towards the promotion of learning and education in connection with architecture.

(2) The council shall have power to invest any sum not expended as above, in such securities as shall be approved by the Government of the Dominion of Canada, or of the Province of Ontario, in the name of any three of their number appointed as trustees, and any income derived from such invested sums shall be added to and considered as part of the ordinary income of the association.

(3) The association may also use surplus funds or invested capital for the rental or purchase of land or premises, or for the building of premises to serve as offices, examination halls, libraries, museums, or for any other public purpose connected with architecture.

33. The registrar and treasurer of the council shall enter in books to be kept for that purpose, a true account of all sums of money by them, or either of them, received and paid under this Act, and such account shall be

audited and submitted to the council at such time, or times, as the council may require.

34. It shall be the duty of the registrar to keep the register in accordance with the provisions of this Act, and the by-laws, orders and regulations of the council.

SCHEDULE A.

(Section 26.)

A. D. 1889.

Date of Registration.	Name.	Title or Distinction (if any).	Residence.
1890. July 1st.	A. B.	Toronto University	Toronto.
1891. Aug. 1st.	C. D.		London.
	E. F.		Ottawa.
	G. H.		Toronto.
	I. J.		Hamilton.

NOTES ON THE CONNECTION BETWEEN THE DIFFERENT STYLES OF "GOTHIC."*

BY R. W. GAMBIER-BOUSFIELD.

Our Secretary told me that he thought this would be a very useful subject for to-night's discussion because there is always a difficulty in ascertaining from books a reason for the "change of style," as it is called. The fact is, that the books usually at the command of students do not give any concise reasons. They give full particulars of the details and characteristics of each date, but they leave it to the ingenuity of the reader to connect the styles. The reasons are there, if sufficient care is taken to decipher them, but in order to do this accurately, the study of a great many books is necessary, otherwise the reader is apt to get hold of some one author's ingenious theory, and to believe that theory to be fact, not having the means of ascertaining the truth.

I hope you have all been looking up the subject during the past fortnight, and are come prepared to lecture me as well as I can lecture you. I am not going to give you a formal lecture, but rather I shall string together a few notes to form a basis for a discussion.

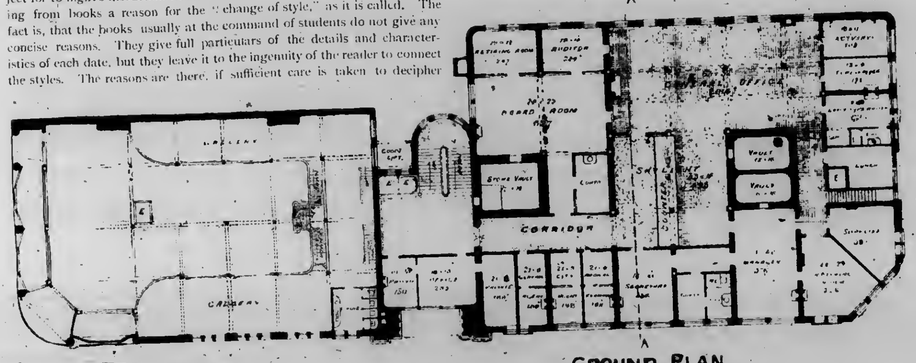
The question before us then is, "What was the reason of the change from one style to another in architecture?" Why has not the architecture that was so fully developed eight centuries ago remained the same,—heavy, magnificent and glorious style that we call "Norman"—to this day? Or why, when the Early English was so characteristic of English art and feeling, was any change found necessary? But in order to answer this question, we must first find out in what architecture consists. What is architecture? And strange to say, you may ask a great many men this question, and not receive the same answer from two of them. But it is a very simple answer when once any one has found it out. The most comprehensive definition that I know is, "Architecture is ornamented or ornamental construction." So far, so good, but what is "ornament?" That word requires some further explanation. Everybody now-a-days answers this question for himself according to his own ideas, which ideas are formed upon or based upon, his knowledge of the art. What one man thinks ornamental, another thinks vile or at least barbarous; and when one architect believes he has ornamented his building in a very satisfactory manner, and feels very "cocky" about it, another architect thinks that the man who designed such a piece of work ought to be taken into a ten acre field and shot.

Mediæval architects, however, answered this question for themselves and for us, and have left their answer for those who choose to read it, graved in imperishable stone. Our Mediæval cathedrals are their answer. From them we learn what is true ornament. Thus is solved the problem, and they shew us what relation ornament bears to construction.

There is one other question to answer before we proceed with our subject. It is, "What is 'Gothic?" For apparently there are two distinct forms of architecture called by the same name. The round arched and the pointed are both called "Gothic." However, "Gothic" simply means that style of architecture that was developed by the French or "Goths"—not the semi-barbarian Visigoths and Ostrogoths—but their civilized descendants, whom we now call French. Classic architecture was developed by the Classic nations, the Greeks and the Romans. The French developed the Gothic, and the terms French Gothic, German Gothic and English Gothic, are used to designate the peculiar characteristics of the style, as it is found in either of these countries.

The first introduction of the round arch into Europe was by the Romans some 250 years B. C., but it was not until a thousand years later that the pointed arch was used. The French were the first to make use of it about A. D. 850. Some three hundred years later, however, the pointed arch fell into disuse because its characteristics were not fully appreciated. During that time it had been used in conjunction with the round arch, but it was the round arch that best suited the requirements of that period, and is the principal feature of the "Latin" or "Norman" style.

It is customary to speak of the "Norman" "Early English" "Decorated" and "Perpendicular" periods as of separate styles, and this has given rise to the difficulty—whereas in reality they are by no means so, but are rather *progressive steps in the working out of a great problem.* That problem was not one of design, but it was the question of construction, and there you have a reason for the so-called "change of style,"—the working out of a problem of construction. The problem was, how to roof in their buildings with their heavy stone vaults, and yet admit the greatest amount of light. It was easy enough to build walls solid enough and strong enough to support the great roofing, but the question was, how they could support the vault when it was necessary to convert the solid walls into windows. This problem resolved itself into another, which was, how to arrange their building materials so as to obtain the greatest result with the smallest amount of material, or in other words, to discover a perfect method of construction, giving to every particle of material its work to do, and having no more in use than was necessary.



PLAN OF OFFICES ACCOMPANYING MESSRS. EDWARDS & WEBSTER'S DESIGN FOR CONFEDERATION LIFE ASSOCIATION BUILDING.

You remember how, in the earliest days of architecture, when the pyramids were built, they were constructed of solid masonry several hundred feet thick, with only some narrow passages and small chambers in the interior quite out of all proportion to the amount of the material used in their construction. They had of course their reasons for building in this way, but anyone building a tomb now, containing a room say 12 feet square, the walls of which were 200 feet thick would be considered a fool. But it took more than four thousand years to find out how to construct properly, and between the time of the pyramids and the period we are considering, the science of building with walls and roof was developed; and we need not go back further than the Romanesque—that intermediate style between Classic and Gothic—for our purposes to-night.

The Romanesque was admirably suited to the brilliant climate of the sunny south. Its small windows admitted just enough light, and not too much hot air; and their small proportions did not endanger the stability of the walls supporting the heavy roofing. The Roman method of roofing was to make one covering answer for ceiling and roof—a method satisfactory neither inside nor out—for a dome high enough for the external appearance was too high for the interior, and *vice versa*. So in the south of France and north of Italy this was not attempted, but instead, they formed their ceiling of stone vaults and covered these externally with wooden roofs.

The earliest roofs consist of a series of domes along the naves—a simple

* Paper read before the Toronto Architectural Sketch Club, illustrated by diagrams.

SKETCH FOR A CHURCH AT SMITH'S FALLS, ONT.

MESSRS. DARLING & CURRY, ARCHITECTS, TORONTO.

extension of the manner of roofing the earlier circular churches. They built a square and clapped a dome on the top, and so on and so on, until the required length of nave was attained. But with the Gothic the tunnel or barrel vault was the simple means employed of roofing the nave. Where side aisles existed, a semi-vault was thrown over them to help in resisting the thrust of the main vault. This relieved the walls of considerable weight, and having found that it was possible in this way to support the vaults and piers, they made their aisles of two stories, putting windows in the outer walls to give light to the upper part of the nave. But still there was no light in the vault or roof.

Now in Normandy, a more northern province, and still more so in England, more light was essential; and simple as it seems, this was the actual cause of the development of the pointed Gothic. You have only to go to the north of France to see this for yourself. Church after church was erected, and the steps in the problem are to be seen in almost all, and we must follow these steps, to see how the pointed arch served the turn of the Mediaeval architects. But to make myself clear is by no means an easy matter. There is nothing more intricate in all our science than vaulting, and I doubt if it is possible in five or ten minutes to enable those among you who know very little at present on this subject to comprehend it through what I say. I can only give you an outline now—details must be filled in later.

Well, then, the first thing that we find them doing in order to obtain more light, is to alter the form of the vault. Hitherto it has only been the barrel or the pointed arch in section, and the first idea that appears to have occurred to them, was the absolute necessity of raising the side walls above the springers of the vault. This was accomplished by the introduction of bold diagonal ribs or groins stretching across the nave from south-west to north-east and north-west to south-east, and making the walls very thick at the corners of the square of vaulting, and building piers in fact strong enough to resist the thrust of the groins. Thus the vaulting divided the nave into squares, and as the aisles were narrower than the nave, the square of the aisle roofs was smaller than the square of the nave; so that an intermediate pier in the nave that had really nothing to do with the vaulting of the nave, but formed a corner of the aisle vaulting, had to be put in; and in order to give it a semblance of use in the nave, they carried it up and threw a small arch across the nave which gave some support to the top of the groining which did not require it at all.

This was so evident a makeshift, and so contrary to the spirit of true art which does not admit of shams, that they found it was of no use attempting anything further with the round arch, and notwithstanding all the ingenuity expended upon the subject in France, Germany and England, their attempts to make the round arch serve the purpose proved futile. The consequence of this proved momentous. They saw that they must adopt the pointed arch and having once made the attempt, they found their way out of the difficulty. By using the pointed arch for the finish of the nave walls, they could not only attain any height they required, but it was no longer necessary to make the plan of each section of vaulting a square; but instead, the intermediate pier became a main one, giving its support not only to the vaults of the aisles, but also to the nave vaults. Then, if they made the section of the vault a pointed arch too, there was no limit to the possibilities of construction. The diagonal ribs of these lofty vaults gave, however, a tremendous thrust to be resisted, and enormous buttresses were built to counteract it. There was only one other step to be taken; if they made the pointed arch of the side walls spring from pier to pier, as a discharging arch, they could do what they liked with the wall itself. With no weight to support, they could pierce its whole width from pier to pier with windows or other openings, for it had become simply a screen to protect the interior of the edifice. It had become what Mr. Ruskin calls "a veil," serving no further purpose than a veil or curtain.

The pointed arch once introduced, was quickly substituted for the rounded heads of windows and doors, and airiness and lightness henceforth characterized every detail.

One other great constructional or structural feature we must notice before proceeding with the problem of vaulting. The immense buttresses, so massive and heavy, occupied a great deal of space, and it was required to reduce them to a minimum. Have you ever thought what could be the relation of the pinnacle to the buttress? Probably you have thought it was more an ornament than a want. If you open your penknives and stick the point of one blade in the table and then press against the upper end of the handle horizontally, it will very soon tumble over; but if you put a weight on top of the handle, it will not be so easy to knock down the knife. So it was with the buttresses. The pinnacle acts as a heavy weight pressing down upon the top of the buttress, and in proportion to its weight the size of the buttress could be reduced. This was a very neat problem, to determine the weight and size of the pinnacle as compared with the size of the buttress necessary to resist the thrusts of the vaults. This is Early English art, the most perfect of the English periods.

Upon all this followed a gradual transformation of every feature. The new groups of three lancets enclosed beneath a label mould, left solid spandrils that were only reduced, not done away with, when five lancets were placed side by side. It was a simple matter to pierce this spandril with a trefoil or something of the sort; but why have it there at all when there was a relieving arch above it which carried all the super-imposed weight? These piers between the lights were reduced, until, in the Decorated Period, they became shafts with caps and bases instead of piers.

I do not propose to enter just now into a description of the details of the three periods under consideration. You all know something about them, and time will not admit, for we have not yet done with the principal feature, the vaulting.

The freedom of the Early English mouldings as compared with the geometrically true mouldings of the Decorated, and the shallowness of the Perpendicular we can discuss presently; as also we can speak about the introduction of new details. But I want you to bear this in mind, and it is a point not half enough noticed, that the perfection of the art of architecture was attained by the Early English period, and that subsequent periods are retrogressive instead of progressive as far as art was concerned. In the Decorated period many features and details were enriched amazingly, but it was without that freedom which characterizes Early English. They turned the trefoil of the Early English with a quatrefoil, which in time became the cinquefoil of the Perpendicular, and by these features alone one can tell the date of any church in Christendom. As the Decorated took away the piers from between the lancets of the Early English, the Perpendicular changed the pillars of the Decorated into vertical mouldings.

Having reached perfection of utility in vaulting, the restless spirits tried to improve upon perfection, and in doing so, naturally went from bad to worse, until after the expenditure of the most consummate ingenuity, they had to confess they had gone back to the original starting point, when to introduce the pointed arch again was their only salvation. They desired to lighten the heavy inverted pyramids of the simple form of Early English vaulting, (as shown on the diagram). They cut off the corners and made semi-octagons of them. Each side of this figure was again sub-divided, until it was so nearly a circle that it was impossible to resist the temptation of making it one. These circles, as you can see, left large flat spaces at the crown of the vault that required support, and were not satisfactory to decorate, but by a continuation of one of the rays of the circle, a diagonal rib was obtained, which gave this flat surface a camber. But where the height of this camber, owing to the pitch or rise of the diagonal rib, would have been very great, they adopted—or attempted rather, for it did not become a fixed principle—that ingenious feature, the pendant, literally hanging from the ribs, the backs of which pressed together gave it support. It was a structural makeshift, and therefore a failure architecturally.

Hitherto their lines had all been true parts of circles, every line a single curve from springer to crown, but here in order to make this fan vaulting successful, they introduced that abomination, the four centred arch. So low had they sunk in their struggles with construction, that they had lost all feeling of art. Every feature was now dealt with from a purely constructional point of view, and art was almost dead. It came about in this way. They had got back to the former principle of vaulting the naves in squares. From each pier sprang a fan vault, the main or transverse rib became broken-backed, and the section thus produced was the four centred arch.

Very many architects of the present day find this wretched makeshift a very convenient feature in their construction—convenient, but not artistic. There is an excuse now-a-days for its use in the economy of house planning. But let me urge upon you to do without it whe ever it is possible. Never introduce it as a feature in any of your designs, or you are trying to make of an acknowledged abortion, a thing to be admired. But no one ever succeeded yet in the attempt. You may as well try to make a silk purse out of a sow's ear. You can make a useful article out of it, but not a silk purse.

Now I must bring this rapid sketch to a conclusion, and no doubt your President will open the discussion.

CONTRACTS

CONTRACTS OPEN.

PEMBROKE, ONT.—An addition is to be built to the public school.

CRANBROOK, ONT.—The Foresters' Court contemplate building a new hall.

SPRINGHILL, N. S.—A new school house to cost $5,500 will probably be erected here.

ESSEX, ONT.—Messrs. Williams Bros. will rebuild the Gardner Block, which was recently burned.

SMITH'S FALLS, ONT.—Mr. Alexander Wood contemplates the erection of a four storey oatmeal mill.

COMBERMERE, ONT.—$900 has been granted by the Ontario Government to complete the repairs to the bridge here.

OTTAWA, ONT.—The present season's expenditure in building operations will amount to about half a million dollars.

BARRIE, ONT.—It is said that the Methodists and English Church people of Trout Creek, are preparing to build new churches.

WOODSTOCK, ONT.—The Mayor has called a public meeting for the 22nd, to discuss plans for the maintenance of a public hospital.

ORILLIA, ONT.—Mr. J. M. Moore, of London, Ont., has been engaged to report on the enlargement of the water works system.

WATERLOO, ONT.—The Methodists will erect a church at an estimated cost of $7,800.—A Roman Catholic church to cost about $3,000 will also be built.

MOOSOMIN, N. W. T.—Mr. C. H. Wheeler, of Winnipeg, is preparing plans for a large brick and stone hotel to be built here for Mr. Whymsing. The building will cost about $8,000.

NEW GLASGOW, N. S.—$50,000 has been appropriated for increasing the capacity of the water system, constructing a system of sewerage, and improving the streets.

LONDON, ONT.—Rev. Mr. McLaurin will erect a handsome residence at the corner of Cromwell and Vidal streets.—By-laws authorizing the block paving of several streets have passed.

WINNIPEG, MAN.—It is said to be the intention of the Great Northwest Railway to extend its lines at least 100 miles during this summer. The work will be commenced some time in June.

KINGSTON, ONT.—The plans prepared by Mr. Newland, architect, for a central fire station, have been accepted.—The School Board will ask the Council to grant $20,000 for the erection of a new school building.—Mr. Dickinson has purchased a site for three dwellings on Sydenham street.

MONTREAL, QUE.—The location of the proposed new buildings on the McGill University grounds have been decided upon. It is said that work will be entered upon immediately, and the whole completed before the end of the year.—Tenders will be shortly asked for plumbing and heating the new Victoria hospital.

HAMILTON, ONT.—A site for a north end branch of the Bank of Hamilton has been purchased at the corner of James and Barton streets.—Plans have been prepared and tenders will be immediately asked for remodelling the Central School building.—The Finance Committee of the Council recommend the issuing of debentures to the amount of $50,000 for school building purposes.

TORONTO, ONT.—Plans are being prepared for a new factory to be erected for Millichamp & Co., on King st. west.—Extensive alterations are to be made to the Millichamp buildings, Adelaide St. E.—The Public Library Board has instructed its architect to prepare plans for a branch library building immediately west of College St. fire station.—A sum has been added to the estimates of the Public School Board to cover the erection of a new school building in St. Matthew's Ward.—Mr. W. H. C. Kerr will erect a business block adjoining the new Canada Life Buildings on King St. west.—The following building permits have been issued: Mrs. Gates, pr. 2 storey and attic bk. stores, 227 and 229 King St. east, cost $3,500.

OUR ILLUSTRATIONS.

COMPETITION DESIGN FOR CONFEDERATION LIFE ASSOCIATION BUILDING.—MESSRS. EDWARDS & WEBSTER, ARCHITECTS, TORONTO.

SKETCH FOR A CHURCH AT SMITH'S FALLS, ONT.—MESSRS. DARLING & CURRY, ARCHITECTS, TORONTO.

QUERIES AND ANSWERS.

APRIL 7th, 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—Would you kindly inform me through your valuable journal whether a contractor, under a contract similar to the revised contract used by the architects and builders of Toronto, would be justified under "clause 8," in refusing the owners or their janitor access to a building prior to its completion, for the purpose of putting on fires, unless relieved by the owners from all liability under the above clause? and if the contractor did the firing, would he be entitled to be paid by the owner for his services. The contractor having allowed the owners to use the building some two months before his contract expired, and before other portions of the building were finished, and access to the furnaces being impossible except through the unfinished portion where shavings, chips, etc., were scattered in abundance, would the owners be justified in enforcing "clause 9," and in charging the contractor with the insurance while they were themselves using the building? An answer will oblige.

Yours truly,

SUBSCRIBER.

[This is clearly a question of law, and one which we imagine a lawyer even would decline to express an opinion upon without being in possession of all the circumstances of the case. It may be that "Subscriber" is behind with his contract. This and a score of other circumstances might have to be taken into consideration in deciding a case of this kind. We would advise "Subscriber" to lay all the circumstances before a lawyer and be governed by whatever he may advise.—ED. A. & B.]

PUBLICATIONS.

The *Cosmopolitan* magazine, of New York, offers a prize of $200 for competitive plans for each of the following subjects. Public Baths; Public Laundries; Public House Co-operative Kitchens. Drawings are to be sent in on or before May 10th.

We have received a copy of a new illustrated catalogue just issued by the Toronto Pressed Brick and Terra Cotta Co. It comprises 50 pages of text and illustrations representing various styles of brick and terra cotta adapted to a variety of purposes. Testimonials regarding the satisfactory quality of the company's products are given by leading architects. We are pleased to notice the success which is being achieved in this new field of Canadian manufacture.

"CANADIAN ARCHITECT AND BUILDER" SERIES OF PRIZE COMPETITIONS.

THE following is a list of competitions in Architectural subjects which we have decided to hold during the winter.

1st.—Three designs with details, for front fence. Designs to be sent in on or before 1st May, 1890. First prize, $5; second, one year's subscription C. A. & B.

2nd.—Essay on Heating and Ventilation. Essays to be sent in on or before 1st May, 1890. First prize $10; second one year's subscription to C. A. & B.

The Architectural Guild of Toronto have very kindly appointed a committee from their number to judge the above competitions. We shall publish each report as sent to us by the committee. Draughtsmanship, neatness and clearness of arrangement of drawings will be taken into consideration in awarding positions.

Drawings must be made on sheets of heavy white paper or bristol board 14 x 20 inches in size, and must be drawn to allow of their being reduced to one-half the above size. Drawings must be made in *firm, strong lines*, with pen and *black* ink. No color or brush work will be allowed.

Each drawing must be marked with the *nom de plume* of its author, and the author's name, *nom de plume* and full address, enclosed in sealed envelope, must accompany each drawing sent in.

We reserve the right to publish any design sent in.

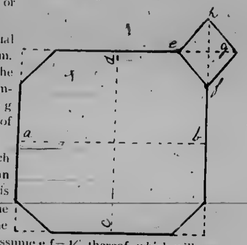
Drawings will be returned to their authors within a reasonable time after the committee has given its decision.

AN EASY METHOD OF CALCULATION.

CITY HALL, QUEBEC, March 8th, 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

The following is an easy method of calculating the area of cross section of wancy timber or of any regular or symmetrical octagon:



RULE.—If a b = c d the area equal a b2.—e f2 or the square of the diam. or thickness of the log, less the square of the wane e f; as it is immediately seen that the square e g on e f is equal to the four wanes of the log.

If a b and c d be unequal, which they often are to the extent of an inch or two, then the area is equal a b × c d less e f2, and if the wane is irregular or different at the four corners, add the four and assume e f = ¼ thereof, which will give a result extremely near the exact area.

C. BAILLAIRGE,
Architect and Engineer.

24 Chomodey St.,
MONTREAL, April 5th, 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—In glancing over my essay on plumbing which you were good enough to print in your last issue, I would call your attention to one or two slight errors, viz.:

"Brick piers" should be read in place of "thick piers." I am made to say "waste pipes, etc., should never be trapped," etc., whereas the "never" should be omitted. "Draw off trap" should read "draw off tap."

Yours truly,

T SQUARE.

CREDIT WHERE CREDIT IS DUE.

MONTREAL, March 20th, 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—In inserting illustrations of some of the sculpture from Mr. Drummond's house here in last month's issue, you omit any mention of the carver. We will feel obliged by your stating in your next issue that Mr. H. Beaumont, of this city, executed all the sculpture and carving for us on this building from our designs and full size drawings, and we have pleasure in bearing testimony to the fidelity and spirit with which he interpreted our ideas.

The capitals of the porch columns which you illustrated, are emblematic of Architecture, Music, Painting and Sculpture.

Faithfully yours,

TAYLOR & GORDON,
Architects.

WANTED—A CODE OF PRACTICE.

HAMILTON, March 20, 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

As the advent of the incorporation of the architects of the Province of Ontario is close at hand, when the profession can rank with the other learned professions, it behooves its members to be firmly united in spirit and practice, and to have a code of rules and conditions strictly to be observed under all circumstances, and from which any departure could only be made at the risk of the party so deviating. This code of rules and practice should be prepared with wisdom, forethought and discretion, so that when the proclamation is made it will be favorably received by all the parties concerned.

Yours truly,

ARCHITECT.

THE PROPER POSITION FOR INLET PIPES.

TORONTO, March 15, 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—What are our master plumbers thinking about, when, as reported in this month's issue of your paper, they want to have the *inlet* pipe for fresh air carried up to the roof of the houses when it is considered unsightly on the ground? If this is done, it is no longer an *inlet*; the very principle is affected by this absurd proposition. It would then be the same height as the soil pipe carried up through the roof, and there would be

no current of air through the soil pipe at all. The inlet should be as low, and the outlet as high as possible in every case. If the inlet is to be carried up to the roof, and *inside* a house, there will at once be an *up* draft, except that as it is in connection with the soil pipe in which also an *up* draft would be created, but for the height of the so called "inlet;" but as they are connected there will simply be a stagnation of air in the pipes.

Yours truly,

ARCHITECT.

TORONTO ARCHITECTURAL SKETCH CLUB.

IN accordance with the suggestion of Mr. S. G. Curry, no special subject was announced for the meeting to be held Tuesday, March 25th, over which he was to preside. Many subjects were brought up for debate and some lively discussions were the result, among those taking part being Messrs. Simpson, Dawson, Brown, Barrett, Rae and Wilby.

The third club competition was decided at this meeting, a good showing of drawings for a baptismal font having been submitted. The following were the successful competitors in order of merit: Senior Section, Messrs. G. T. Goldstone, J. A. Radford, C. J. Gibson; Junior Section, Messrs. A. C. Barrett, T. B. Johnston and J. Y. S. Russell.

A thoughtful and well rendered design was received from Mr. J. McC. Radford, a Montreal member of the club, but it was too late to be judged with the other members. Mr. Frank Darling gave a thorough criticism of each of the designs in an impartial and acceptable manner.

The first exhibition of the club was opened to the members at this meeting and to the public for the remaining days of the week. It was a loan exhibition by Mr. Wm. R. Gregg of photographs of representative buildings in the United States, and proved a very interesting one to the members and to the large numbers who visited it during the week.

On Tuesday, April 8th, the club forsook its headquarters to accept the invitation of Mr. James Bain to spend the evening at the Public Library in studying the many works on architecture it contains. Few were aware of the value of the collection, and the meeting will probably result in a more liberal patronage of the institution by the architects and draughtsmen who were present.

NOTES.

The Club is rapidly gaining in numbers. At the last meeting the following names were put through: Messrs. J. P. Murray, M. B. Aylesworth, J. P. Hynes, W. A. Sherwood and John A. Pearson.

Some forty members have taken advantage of the special artist's rate granted the club and secured season tickets to the Toronto Art Gallery.

It has been suggested that a Photographic Section be formed for the summer season, the object being the organization of photographic trips, and holding of exhibitions of amateur work.

QUEBEC.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

A LARGELY attended meeting a few days since passed resolutions favorable to the erection of a monument to the memory of Major Short and Sergt. Wallick of B Battery, Canadian regiment of artillery, who were accidentally killed while looking at the great fire of the 16th May last, when a large portion of St. Sauveur was destroyed. Collectors have been appointed to canvass for subscriptions, and a committee named to open negotiations with Canadian sculptors, with a view of arriving at a decision as to a design and cost. It is anticipated that a sufficient sum will be available to guarantee the erection of a handsome memorial.

Plans for the new hotel proposed to be built on the site of the old Parliament buildings are now being prepared. When completed they will be submitted for final approval by the directors, when tenders for its construction will be invited, it will approximate $200,000 in cost. Work will probably begin about the end of May. Standing at an elevation of about 150 feet above the St. Lawrence, its position will command a view of the magnificent scenery seen from the famed Dufferin Terrace, including the village of Beauport and St. Joseph, the town of Levis, and the Island of Orleans, also the whole harbour of Quebec, and Montmorency Falls in the distance. It is intended to connect the Lower Town with the hotel by means of an elevator.

The Academy of Music has lately undergone a thorough overhauling, including a very considerable enlargement of the stage, new scenery, new dressing rooms and green room in basement, a graded floor in the auditorium, and new opera chairs of the best make, the whole tending to a vast improvement upon the original building. Mr. W. E. Russell, the present proprietor, intends having the Academy open all the year round, and so remove the standing reproach of Quebec, that it has no place of amusement. A hearty endorsement of this enterprising spirit, on the part of the public, is now in order.

OWEN SOUND.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

The building outlook is good this season. Plans have been prepared for the following: 3 storey building, store and offices, brick and limestone trimmings, corner of Baker and Poulett strees, 25 ft. by 100 ft., I. T. McCallum, owner; 3 storey building, 40 ft. frontage by 76 ft. deep, for S. J. Parker, two stores and office and lodge rooms above. Building will be red brick with Credit Valley stone trimmings; R. Chuslie, residence; J. C. Crane, residence; R. P. Butchart & Bro. are rebuilding on the site of their old stand, two storeys 57 ft. on Poulett St. by 100 on Baker, to be laid out in two stores with offices above. Mr. John Miller is about to build a terrace of three houses; total frontage of 71 ft.

Twelve feet of land on Poulett st. was bought on Thursday last at $250 per foot frontage. This is the highest that has ever been paid for land in Owen Sound.

The C. P. R. are rapidly pushing ahead the sheet piling and slips, and the dredging will commence soon.

MONTREAL.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

THE prospects for a busy building trade in our city are brightening, and ere the present season closes we expect to have commenced several important buildings, amongst others the following: The Y. M. C. A. on Dominion Square, the Victoria hospital at the head of University street (the gift to the city of Sir Donald A. Smith and Sir George Stephen); the new Science School for McGill University, (the gift of the late James Workman), the Sun Life building on Notre Dame street and a large mansion on upper Peel street for Duncan McIntyre, estimated to cost half a million, and only yesterday was added to this a magnificent gift to McGill University by Mr. W. C. McDonald, of about half a million dollars which includes two buildings which he has agreed to erect for the college, one to be the "McDonald Technical Building," and the other the "McDonald Physics Building." All Mr. McDonald asks the Governors of the University to do is to provide a site and approve of the plans—the rest he undertakes himself. It is estimated that the two buildings with their equipments will cost about three hundred thousand dollars. McGill college will be thus placed in a position equal to the best on the continent, and with the new means at its disposal will be able to adapt the faculty to the immediate demands of the hour by establishing chairs of electrical and mechanical engineering, etc. Besides these, Sir Donald A. Smith has bought the residence of the late Thomas Workman which occupies a position on the College grounds, and which he purposes altering and adapting for use by the Donalda Department for lady students.

During the last month permits have been taken out for some ten or twelve buildings, ranging from two to six thousand dollars a piece.

REAL ESTATE.

Real estate during the past month has been active, building lots in the west end being in specially good demand. It is almost impossible to buy choice lots in the city to-day, but there is plenty of land available in the vicinity of Montreal, the only drawback being the transit facilities. As soon as some system of rapid transportation is put into effect, which must of necessity soon be, farm properties in the neighborhood of Montreal will attract the attention of investors, speculators and home seekers. During the month of February the sale transfers in Montreal and Cote St. Antoine amounted to $571,905.54, which is about $22,000 more than the corresponding month of last year.

CANADIAN SOCIETY OF CIVIL ENGINEERS.

The Canadian Society of Civil Engineers have leased club rooms over the west end branch of the Bank of Montreal, on the corner of St. Catherine and Mansfield streets, and expect to move into them on the 1st of May.

FLOOD PROTECTION.

I learn that Mr. Keefer has arrived in the city to watch the action of the ice in breaking up, he having been appointed by the Government to report to them on the feasibility of plan No. 6.

NEW BRIDGE.

I learn a charter has been granted to a local company for the construction of a bridge from Montreal to Longueil. The charter I understand has certain restrictions which will have to be overcome before any work is commenced, such as satisfying the City Council, the Harbor Commissioners, the Board of Trade, etc., etc. No doubt some better means of communication between the two shores of the St. Lawrence at this point is wanted, but whether it should be in the form of a bridge as proposed or some such scheme as the Shearer scheme, is a question upon which engineers, like doctors, differ. To my mind the Shearer scheme, with certain modifications, would be the most practical scheme yet presented for either connecting both shores of the river, for harbor improvements or flood protection.

It is to be hoped that some opportunity will be given to the Government Board to examine this scheme previous to adopting plan No. 6.

ARCHITECTS OF THE PROVINCE OF QUEBEC.

The principal architects residing in Montreal held a meeting this afternoon for the purpose of discussing the advisability of seeking incorporation, similar to that proposed for Ontario. There was a large attendance and many spoke strongly of endeavoring to form a Dominion association rather than a provincial one; but at all hazards to protect the interests of the province of Quebec with local incorporation if it is not possible to have Dominion incorporation. A committee was appointed to report as soon possible.

NO FLOODS THIS YEAR.

The harbor is clear of ice. No floods this year.

"CANADIAN ARCHITECT AND BUILDER" SERIES OF PRIZE COMPETITIONS.

INTERIOR DETAILS OF A MODERATE COST HOUSE.

IN this competition it is no easy matter to arrive at a satisfactory decision, as no one of the five drawings is free from objections. We place them in the order named "Echo," "Three Circles," "Novice," "B" and "Nota Bena." Granted that the details for a small house should be simple and quiet in character, "Echo" naturally comes in for first place, especially as his ideas are good while his details cannot be called bad. If executed in really good materials and in a workmanlike manner, the effect would be good enough for any small or moderately large house. The draughtsmanship is not up to the mark.

In giving "Three Circles" second place, it may be said his ideas are in good taste though too elaborate for a small house, one of his architraves having 4 members. It cannot be said that his details are better than those of "Echo." His beam, post and pilasters are rather out of date, and while the drawing is better, though marred by some carelessness, his printing would not look well in the pages of the ARCHITECT AND BUILDER.

"Novice" has the same faults. His ideas are not new, and his details, with some exceptions, are common, while his drawing shows no superiority.

"B" has a very painstaking drawing and deserves encouragement, but while his details are neither good nor new, they are too elaborate, his base being composed of four pieces with but one plain piece in the lot.

"Nota Bena" has not enough detail to cover the ground. Those he does show are, however, simple, and to that extent commendable. He eschews printing.

Your obedient servants,

R. G. EDWARDS,
JOHN GEMMELL.
W. A. LANGTON.

The author of the drawing marked "Echo," to which the committee has awarded first position, is Mr. James Walker, 5 Ann Street, Toronto. The names of the authors of the designs placed second, fourth and fifth have not reached us. We would be pleased to receive them.

COMPETITION FOR MANTELS.

We beg to report that drawings received in competition for mantels are a disappointment, yet it might have been expected that for the one feature in most houses used as the vehicle to display a little art or a violent striving after it, would have been an opportunity which should have evoked more hearty response.

We place first designs by "1890" as being quieter in taste, and showing more architectural knowledge of mouldings and their arrangement, although execution of drawings wants clearness and decision.

No. 2 by "Pen and Ink" is neat, painfully so, perhaps. The author would do well by ardent practice to attain more freedom of line.

"Andiron's" designs are modelled on old types, it being generally admitted now that shelf 3' 9" or 4 ft. is altogether too low, with no excuse except saving material when marble was in vogue.

Of designs by "Minerva," would say there are a good many ideas gathered together, exaggerations of style, which are drawn with considerable inexperience.

JOHN GEMMELL.
R. J. EDWARDS.
W. A. LANGTON.

The author of "1890" is Mr. James Walker, 5 Ann Street, Toronto, and of the design marked "Pen and Ink," Mr. Albert Ewart, 464 Besserer St., Ottawa.

A deputation consisting of Mr. Wm. Young, of Hamilton, and Col. Massey and Wm. Gray, of Montreal, waited on the Minister of Customs recently and asked that the duty on iron soil pipes and fittings be changed from 30 per cent. ad. valorem to a specific duty of one cent per pound.

STEREOTOMY.

STONE-CUTTING.

By JOHN A. PEARSON.

STONE-CUTTING is that branch of stereotomy which treats of the cutting of stone pieces of certain form from the rough block, so that when placed in proper order they shall form a given whole. Taking it as a science it embraces the following:—

The construction of projections of an arch, cornice, etc., of at least so much as will permit.

The derivation of directing instruments used by the workman to guide him in cutting the rough block to its required shape.

The rules for applying these instruments in their proper order and manner.

The number of directing instruments and the mode of their application will depend considerably on the ingenuity of the designer. The instruments used in directing the mason in stone-cutting are squares, templets, bevels, moulds, straight-edge and bender.

Squares and bevels give the angle formed by the meeting of two arrises bounding one of the faces. These are called the angles of the faces, or plane angles. Bevels giving the surfaces of the stone showing the angles between the two faces are called dihedrol bevels. Templets give the form or shape of a stone or other distinguishing lines of the surface, and are applied either on a face or bed. Moulds applied generally on the beds and joints, give the contour of the stone. Benders are for use on curved surfaces where a trammel cannot be applied. It is not the intention here to describe the different kinds of tools used by the workman in accomplishing his work, or the different styles of finish wrought on faces of stone, but to explain a few problems that are of common occurrence, and the simplest and quickest method of working same.

TO FORM PLANE SURFACES MAKING ANY GIVEN ANGLE WITH EACH OTHER.

This is the fundamental problem upon which all others are founded, and we shall take pains to explain this in order to avoid repetition. In working a rough block of stone, the mason begins by bringing to a plane surface one of the largest faces, which is generally a bed, and then a joint is worked to which a mould can be applied. Of course this depends upon the kind of work, and in some cases would not be the quickest method of attaining the desired end. The mode of procedure is as follows:

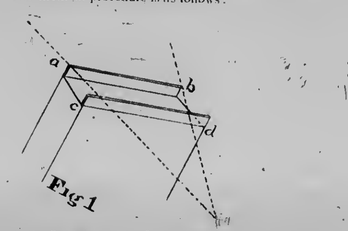


Fig 1

Figure 1 represents the first steps in forming a plane surface upon a rough block of stone, having two straight edges A B and C D of equal width, drafts are raised along the edges of the stone, and the draft on the opposite side is sunk till by sighting the top edges they are found to be in the same plane. If the straight edges are not of an equal width or parallel, the stone can be taken out of winding if they project sufficiently over the edge of the stone to sight the bottom edge. Cross drafts are now raised, and the rough stone punched or pointed down close to the surface and then chiselled off.

TO FORM A WINDING SURFACE.

Two edges are required for this purpose, one a parallel, and the other a divergent edge, the amount of divergence depending on the distance they are to be set apart.

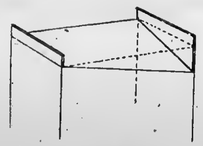


Fig 2

Sink the edges into drafts across the ends of the stone until the upper edge is out of winding. These drafts are connected by additional drafts, and the rough knocked off and the face worked to fit the straight edge, which should be applied parallel to the end drafts. The edge applied to the surface of stone on twisting faces should be round. The reason for this is self apparent. The diverging rule is called the winding strip, and the straight edge the twisting edge. In applying the twisting rules to a stone, they must be kept in parallel planes, and to keep these edges at the proper degree of divergence, it is convenient to connect the rules with light iron rods.

(To be continued.)

PERSONALS.

Mr. M. L. Buffy, architect, of Aylmer, Ont., has opened an office at London, Ont.

Mr. J. W. Hopkins, architect, Montreal, has recently returned from a visit to the Pacific Coast.

In the competition for plans for a new city hall for the city of St. Louis, Messrs. James & James, of New York, were awarded sixth position.

THE CANADIAN IMPORT DUTY ON ARCHITECTURAL DRAWINGS.

QUEBEC, April 11th, 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

SIR,—Competitors from the United States for plans of our proposed City Hall have written me as to whether such goods will be considered dutiable. You are no doubt in possession of the required information as competitive designs from the States I believe have been sent in for proposed buildings in Toronto. As this question interests the profession at large, I shall look for a few lines from you on the subject in the forthcoming number of your journal.

Your obedient servant,
CHAS. BAILLAIRGE,
City Engineer.

[The Custom authorities inform us that a duty of one-half of one per cent., assessed upon the value of the building, is charged upon American architectural drawings entering the Dominion. A further duty of one per cent. is charged upon the specifications.—ED. C. A. & B.]

TENDERS FOR AN IRON BRIDGE ACROSS NATION RIVER AT CASSELMAN.

Sealed tenders will be received by the undersigned up to the 20TH OF MAY at two o'clock p. m., for the building of an Iron Bridge across Nation River at Casselman; bridge to be 320 feet in length; roadway 16 feet wide; cut stone piers; stone and lumber convenient to the work. Tenderers can tender on their own plan; two plans of the proposed bridge and specifications can be seen at my office at South Casselman; all tenders are subject to the approval of the County Council of Prescott & Russel at June session; work to be completed by the 1st of November next.

O. QUENNEVILLE,
Commissioner of the Proposed Bridge.
South Casselman, April 1, 1890.

NOTICE TO CONTRACTORS.

Tenders will be received by registered post, addressed to the City Engineer, up to 12 o'clock noon of the 22ND DAY OF APRIL, 1890, for the construction of the following works, viz.:

TRINIDAD ASPHALT PAVEMENTS
On Sherbourne Street, from King Street to Queen Street; Ontario Street, from Carlton Street to Howard Street.

SCORIA BLOCK PAVEMENT.
The time for receiving tenders called for for scoria block pavement on Sherbourne street from King street to Queen street, to be received on the 8th April, is hereby extended to noon of the 22ND DAY OF APRIL, 1890.

Plans can be seen, quantities and forms of tender obtained on and after Tuesday, the 15th day of April, at the City Engineer's office.

A deposit in the form of a marked cheque, payable to the order of the City Treasurer, for the sum of 5 per cent. on the value of the work tendered for under $1,000, and 2½ per cent. over that amount, must accompany each and every tender, otherwise it will not be entertained.

All tenders must bear the bona fide signatures of the contractor and his sureties (see specifications) or they will be ruled out as informal.

The committee do not bind themselves to accept the lowest or any tender.

JOHN SHAW,
Chairman Committee on Works.
Committee Rooms, Toronto, April 3rd, 1890.

CONFEDERATION LIFE BUILDINGS
BY "PAID UP POLICY"

MESSRS. EDWARDS & WEBSTER, ARCHITECTS, TORONTO.

CANADIAN ARCHITECT AND BUILDER

FINE AND INDUSTRIAL ARTS · DECORATION · FURNISHING
CONSTRUCTION · SANITATION · ENGINEERING

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PUBLISHED ON THE THIRD SATURDAY IN EACH MONTH IN THE INTEREST OF
ARCHITECTS, CIVIL AND SANITARY ENGINEERS, PLUMBERS, DECORATORS, BUILDERS, CONTRACTORS, AND MANUFACTURERS OF AND DEALERS IN BUILDING MATERIALS AND APPLIANCES.

C. H. MORTIMER, Publisher,
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TEMPLE BUILDING, MONTREAL.

SUBSCRIPTIONS.

The CANADIAN ARCHITECT AND BUILDER will be mailed to any address in Canada or the United States for $2.00 per year. The price to subscribers in foreign countries, is $2.50. Subscriptions are payable in advance. The paper will be discontinued at expiration of term paid for, if so stipulated by the subscriber; but where no such understanding exists, it will be continued until instructions to discontinue are received and all arrearages are paid.

ADVERTISEMENTS.

Prices for advertising sent promptly on application. Orders for advertising should reach the office of publication not later than the 12th day of the month, and changes of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The Ontario Association of Architects has appointed the "Canadian Architect and Builder" its official paper.

The publisher of the "The Canadian Architect and Builder" desires to ensure the regular and prompt delivery of this Journal to every subscriber, and requests that any cause of complaint in this particular be reported at once to the office of publication. Subscribers who may change their address should also give prompt notice of same, and in doing so, should give both the old and new address.

OUR MONTREAL OFFICE.

IN order to further extend the influence of this journal, keep *en rapport* with everything of special interest pertaining to the science of construction within the Dominion, and serve in the most effectual way the interests of our subscribers and advertisers, we have established a permanent office in the city of Montreal. It is located in the Temple Buildings on St. James street, and being in the heart of the business portion of the city, is convenient of access. We shall be glad to welcome there old acquaintances as well as any new ones. All enquiries relating to the editorial or business departments of the paper, presented personally or by letter at our Montreal office, will receive prompt attention.

IT is not surprising to learn that the appointment of a competent street commissioner saved the city of Hamilton upwards of fifteen hundred dollars in one month. On the same principle, we hesitate the opinion that in the erection of buildings costing $10,000 and upwards, the interests of economy and faithful workmanship demand the supervision of the work by a competent clerk of the works. The buildings erected in Canadian cities in future will be, it is fair to assume, of a more costly and important character than heretofore, and something more than the periodical inspection of the architect will be found necessary for the protection of the client's interest.

THE enquiry into the causes of the St. George bridge disaster in the courts of Toronto, is one of the most remarkable in its importance as well as in its attending circumstances that has ever engaged the attention of a Canadian judge and jury. Its great importance lies in the fact that upon the verdict hang heavy claims for damages brought against the Grand Trunk Railway Company on behalf of persons to whom suffering and loss were caused by the accident. The investigation which was recently brought to a close occupied a period of ten weeks, during which time 122 witnesses and 137 experts underwent examination. At the conclusion of all this testimony, the judge requested of the jury answers to 37 questions which he had prepared bearing upon the case. One of the most important opinions expressed by the jury is that the railway company was guilty of negligence in running the train at an unreasonable and improper speed, viz., about 50 miles per hour, using a tire too thin, and not applying the brakes at the proper time, and that the result was caused by such negligence. The matter will be further argued before a decision is rendered, and is likely to be carried eventually to the Privy Council.

WE very much regret that the difficulties between the Toronto master builders and their late employees appears to be no nearer solution than at its beginning. Indeed, to all appearances the breach between the parties to the dispute has widened. Both have refused the offer of mediation made to them through the City Council. It may possibly be that they can show satisfactory reasons for so doing; if so, the public would seem to be entitled to know them. The workmen were the first to refuse to take part in a conference for the adjustment of the dispute, and it may be that in consequence the masters felt themselves called upon to pursue a similar course. If only the parties directly connected with the strike were affected by it, they might well be left to continue the struggle as long as it suited them to do so. But when their conduct affects in the most serious manner the prosperity of the entire community, the laws should be so adjusted as to compel them to submit their differences to an impartial tribunal for settlement. Such a tribunal should be composed of judges of the Superior Courts or persons similarly placed in a position to pronounce impartially upon the matters in dispute. Before such a tribunal, upon the occurrence of a disagreement, both the parties thereto should be compelled to send a representative to present their case, and by the decision of the Court they should be compelled to abide. Simultaneously with the establishing of such a court of arbitration, it should be made a punishable offence for any body of men to inaugurate a strike. It is time that the Government should provide some such means as this to remove the possibility of the present annually recurring disputes.

NOTWITHSTANDING all that has been written on the subject, the terms of architectural competitions announced by clerical and other corporations in this country, grow more and more ridiculous. The latest estimate of the value of an architects time and ability comes from the church wardens of St. Paul's Cathedral, London, Ont. These gentlemen gravely

announce by advertisements in the daily press that "It is the intention of the vestry of St. Paul's Cathedral, London, to enlarge and improve the Cathedral at an expenditure of from $30,000 to $35,000. Competitive plans for said work will be received by the church wardens until the 10th day of May, 1890. *Vestry do not bind themselves to accept any plan.* In event of one being accepted, the second best *by vote of Vestry* to receive $50." The italics are ours. Truly a magnanimous offer! We would advise all unemployed architects, if any there be, who are blessed with a passion for labor for its own sake, irrespective of either glory or reward, to submit designs in this competition for the approval or otherwise of the trained (?) judgment of the gentlemen composing the vestry of St. Paul's Cathedral. Joking aside, we regard as nothing short of contemptible the conduct of church officials who, forgetting the precept, "Render unto Cæsar the things that are Cæsar's," are seeking to make use of the products of the architect's brain without making him compensation. There would seem to be need of greater harmony between the preaching and practice connected with the church in question. So far as the architects are concerned, it is a foregone conclusion that not one of them who is in the least degree entitled to the name will have anything whatever to do with the so-called competition.

THAT accidents to life are not more frequent than they are is almost sufficient proof without other evidence that there is a merciful and all powerful ruler of our destinies. Man certainly takes but few precautions to preserve life, and if a life was sacrificed for every piece of reckless disregard of statics which is exhibited by man, a very few weeks would convince us all that it would be necessary to do something to remedy an evil which resulted in many deaths and much suffering. There now stands, or did stand a few days ago, in the town of Barrie, Ont., a brick wall of one storey in height, with three openings in same which is carried on a rotten breast-summer supported at both ends by brick walls, and at two intermediate points by light turned wooden columns, which are not under the centre of the wall, but rather to the inner edge. This wall has been the front wall of a two storey building which has lately been burned. The owner has apparently not made up his mind as to what he will do with what is left of his building, and in the meantime allows the above wall to remain, hazarding the lives of those who may pass along the sidewalk beneath. It seems incredible that a man endowed with common sense will allow a danger so threatening to stand on the very edge of a sidewalk along which many persons pass each day. The town council or some of its officials should have sufficient knowledge to be aware of the danger, and have the same remedied at once. It should not be argued that the fact of the wall having stood thus far, is a guarantee that it will not fall. It is possible and very probable that it may fall or be blown down, and therefore it should be removed at once.

THE Ontario Architects' Act, as passed by the Provincial Legislature, does nothing at all to prevent the execution of bad work in the construction of buildings, and although it professes to be for the protection of the public, the Government eliminated a clause in the draft of the Act, which was the one practical clause for this object. Architects may be thoroughly qualified, and about the work of qualified men there need be no question, but unhappily architects are not employed to carry out or superintend one half of the buildings that are erected; these buildings are carried out by men who must be looked after, and it is with this object that Inspectors of Buildings are appointed, and that plans for all buildings must be submitted for their inspection before the buildings are allowed to be proceeded with. The system of inspection, or rather the means by which the inspector gets his first information about a building, differ materially in almost every city. In some places it is necessary to deposit on a certain day of the week, prior to the meeting of a committee, a copy of the plans, elevations, etc., and of the specification. In others, the drawings only need be deposited; while in others a regular form must be filled up which will give the fullest description of the house or whatever the building may be, the materials of the construction, sizes of timbers, etc. In Toronto there is no system worthy of the name. The only thing approaching a system is the permit book, which does look business-like, but as to the rest of the proceedings for the "protection of the public," the following conversation, which actually took place at the Toronto City Hall when some plans were brought down for inspection during the past month, will serve to show how the "public" of Toronto are "protected:" Architect's Clerk—"Good morning Mr. ——!" Inspector—"Good morning, sir!" A. C.—"Want you to have a look at these plans, please." Insp. (opening out roll)—"Oh! Ah! Nice job this! What is it to cost?" A. C.—"About $5,000 I suppose." Insp.—"Well, I suppose your boss knows how to make a plan?" A. C.—"I guess so." Insp. (to his clerk)—"Guess it's all right; make out a permit Mr. ——." (Permit made out, plans signed in name of City Commissioner, building proceeded with forthwith). The time has come when we should have a system of inspection of plans if there is to be any inspection at all, and the very variety of systems in vogue in various cities shows that inspection is not an easy matter and that there is a great difference of opinion as to the best method of procedure. Now it is putting a qualified architect to a great deal of trouble when he is obliged to submit his drawings for inspection just as if he were some ignoramus who knows nothing whatever of building but nevertheless makes an attempt at it, or as if he were no better than the unqualified dabblers in the profession. The mere mention of the name of a fully qualified architect in connection with plans ought to be a guarantee for the proper construction and management of a building, and it may be that this was the reason why the Inspector in the conversation above, passed the plans without more ado. He knew the architect was incapable of doing anything which he could point out as wrong. But there is a looseness in this procedure which requires correcting. A good man's name might be used in order to pass absolute death-traps, with which he had nothing to do. But civic committees have apparently found it impossible to draw the line, and good and bad must submit to the same regulations. Even this is better than having no regulations.

Of all the systems we know actually in use, we think there is no better at present devised than that of submitting plans (for inspection only, not for filing) together with a form of specification, filled up in the form of questions and answers, the questions being printed and the answers written in by the architect, this form to be filed and used by the Inspector in his visits to the building. When the drawings are taken down and left, together with this form, the Inspector, who it is presumed is a duly qualified person, has his regular appointed time for examining all that have been submitted. His work cannot be hurried, and it is far better that it should be the understood thing that the answer respecting the drawings will not be given till the next day. In one place we know of where it was necessary to deposit tracings of the drawings, it was the rule to leave them at the Inspector's office before five o'clock every Thursday. If a permit was required during that week, the Inspector made his examination on Friday and made up his report on all the plans submitted for the meeting of his committee in the evening of the same day. If he reported such and such things were amiss or not according to the by-law, these drawings were sent back with a memorandum to have them altered accordingly, and if the matter was a slight one, the Inspector could pass them when submitted to him as altered any day afterwards. If, however, the alterations necessary entailed, as it might in the hands of builders' clerks, the remodelling of the place, the passage of the plans was thrown back a whole week. Now in this way, the architect who knew his business had no trouble except that of preparing a tracing, whereas the man who did not know how to build soon found it necessary that he should either learn how or give it up. Undoubtedly the position of Inspector is one in which a disagreeable man can make himself very obnoxious. The choice of Inspector must always be made with the greatest care, and his duties and the limitations of his authority very clearly defined. He must be a man of high principle, above bribery and corruption, for we have known a case where an architect, do what he would, never could get his plans passed without endless trouble and annoyance, until at last he learned from the Inspector himself that the reason was "he had done nothing towards smoothing the way." In another case a scalawag "architect" paid the Inspector to annoy a good architect who had recently set up in the neighborhood.

As to the form of specification to accompany the application for a permit, the one in use in Montreal is as simple and clear as need be, although it is a question whether it is any use supplying answers to questions which, unless the Inspector is a model, he is not the least likely to look at. There are two forms in use in that city, one for new buildings and one for alterations to existing structures; and in about two dozen questions a thorough description of the method of construction, thicknesses of walls, dimensions of joists, etc., etc., is elicited. We doubt if the Inspector takes the trouble to calculate the strains and weights that each floor is likely to be subject to, so as to ascertain whether the specified sizes of joists are sufficient, but undoubtedly if he passes such a description and they ultimately prove insufficient, the blame must in a measure rest upon him, because the manner in which the building is to be occupied or the purposes for which it is erected are described at length. Without doubt a very efficient form could easily be drafted, and by the aid of practical and unbiassed minds a good scheme could be worked out, whereby the least trouble would be given to qualified architects, while at the same time jobbing practitioners would be hindered from endangering the lives of the public. Looking round about us we see many buildings going up at the present time which would never have been allowed to be carried out in their present forms if there had been a responsible Inspector to examine the plans. We do not want a good-natured man, who sometimes likes a little bit of bullying, and who if you go to work in the right way with him, will pass any kind of construction without examination. What we want is an educated, practical architect, who knows his duties and fulfils them impartially.

ON page 41 of a pamphlet entitled "The Record of the Mowat Government; 18 years of Progressive Legislation and Honest Administration; 1872-1890," is the following statement relating to the erection of the Parliament Buildings: "Indeed, after the discussion, all that was left of the matter was the statement that the architect of the works was an American, though the fact was that he was born in England, and had of late years been residing in Buffalo. *He secured the appointment after a fair competition, expert judges deciding that his plans were the best.*" The last sentence is a glaring and deliberate falsehood. In fact the statement should be characterized by the use of a word of three letters. Mr. Waite did not secure the work after a just competition, and the fact that he secured the work is proof sufficient that the competition was not a fair one. We do not know how the expert judges, who were the Hon. Alex. Mackenzie, Messrs. W. G. Storm and R. A. Waite, could decide that Mr. Waite's design was the best sent in, as Mr. Waite had no design in or he would not have been one of the experts.

The facts are that there was a competition in the year 1880 when thirteen sets of plans were sent in. Six of these plans were sent from the States, seven from Canada. Three designs, all from Canada, were awarded the three premiums, the winners of the first prize being Messrs. Gordon & Helliwell, of Toronto. Two designs were placed first and second in merit, but were not considered as entitled to the premium, as they exceeded the money limit very materially. These designs were submitted by Messrs. Darling & Curry and Smith & Gemmell. The Government at first decided to erect a building according to the plans of Gordon & Helliwell, but finally determined to have Messrs. Gordon & Helliwell, Darling & Curry and Smith & Gemmell compete a second time to determine which of their plans would be most suitable. This competition was held, and it was then determined to ask Messrs. Gordon & Helliwell and Darling & Curry to prepare a full set of working drawings with specifications, that the work would be tendered for and the relative cost of the two designs arrived at to a certainty. These two firms did make such drawings on the distinct understanding that one or the other would be selected to erect the building, and that the defeated competitor would be paid a fair compensation for the preparing of their design for tendering. Working drawings were prepared by these two firms, and tenders were received as follows: Messrs. Gordon & Helliwell's design, furnished complete, $542,000; Messrs. Darling & Curry's design, $612,000. The Government decided that the Province was not in a position to expend that amount of money, and abandoned the erection of the building for a time.

In 1885 the Government obtained a vote of $750,000 for the erection of the building, claiming that that amount was amply sufficient, as they had tenders of $542,000 and $612,000 for two buildings either of which would serve the purpose of the province. Up to this time the Government architect had been consulted as to the proceedings taken after the experts in the first competition had handed in their report. By the way, we may here remark that this report has never been made public, a most unusual thing, as all such reports are published for the information of the competitors. Mr. Waite, however, without any authority whatever, informed the *Mail* of the substance of that report, and that paper published the information received from him on the 4th of December, 1880. It embraces nearly one and three quarter columns of matter, and any one who desires may by reading the article get a fair idea of the substance of the report. Immediately after the session of 1885 the designs of Messrs. Gordon & Helliwell and Messrs. Darling & Curry were entrusted to Mr. Waite that he might report as to which of the two was the more preferable. Why the Hon. Alex. Mackenzie and Mr. W. G. Storm were not associated with him we do not know, but presume that the Government have such knowledge. Instead of Mr. Waite reporting in a few weeks, as he might have done and should have done, he did not hand in his report until eight or nine months had elapsed. It may be that the difficulty of deciding between the two designs required that amount of time to determine their respective merits. It is, however, surmised that the delay was rendered necessary that Mr. Waite might worm himself into the confidence of some members of the Government, and also quietly impress upon the Government that in his opinion neither of the designs was suitable, and that he was the only architect on this continent capable of carrying out such an important work. It is also surmised that before sending in his report he had in the kindness of his heart prepared sketch plans which he approved as being much superior to the designs then in his possession. It may be that this is the competition which Mr. Waite entered and which was so fairly conducted by competent judges. We have been informed that he sent in a report condemning the designs of Messrs. Gordon & Helliwell and Darling & Curry. This report, like the first one, has never seen the light of day, nor has Mr. Waite condescended to furnish an epitome of its contents further than to circulate statements which were false.

It would seem that Mr. Waite was employed upon the preparation of his design for months before the fact became known, the Government not having the common decency to inform Messrs. Gordon & Helliwell and Darling & Curry that they had decided not to erect the provincial buildings according to either of their designs before giving Mr. Waite the commission. This courtesy to the Toronto architects was more than due, as they had prepared their designs at a large outlay to themselves, and had waited the convenience of the Government for some five years. Mr. Fraser, in making explanations to the House as to the payment to them for their rejected designs, claimed great credit to himself and the Government for the way in which he had shelved them at a small expense to the province, and showed that if compound interest for the five years was deducted from the amount paid, the actual payment would be very much reduced. This is an example of an economical and "honest administration," which is sufficient to cause a none too scrupulous man to blush for shame. Now, the Canadian architects were forced to design a building to cost within

$500,000, or as near that amount as possible. The English born architect residing in the States was not limited in cost. His design will cost $2,000,000, and then be only an ordinary non-fireproof building. The fact that the first contract let exceeded the appropriation, shows how little care was taken to erect a building within the means of the province, or what the Government stated at first was within the means of the province. Mr. Waite's design was never submitted to an expert, for the very good reason that it was never in a position to submit until after the construction of the building was commenced. It is a doubtful matter if the Ontario Government even knows at this date exactly what they are to receive when the completed buildings are handed over to them. The conduct of the Government when dealing with the Canadian architects is in very strong contrast with their method of dealing with the Buffalo individual. In the one case everything must be arranged for, even to the laying of the gas and water mains from the city mains over to the building, so that the total cost of the building may be ascertained with the exception of the cost of the furniture; in the other the work is let piecemeal, and no idea of the total cost is obtained except the estimates of the architect, who may have furnished the Government with an accurate and reliable estimate, but such estimate cannot agree with the amount stated by the Government as being sufficient, as Mr. Waite has stated to outside parties that the cost of the building would be not less than $2,000,000. The above is a statement of the main facts of the Parliament Buildings business up to date. That the Government does not consider their conduct above reproach is shown in the pamphlet which they have issued. If they considered that what they have done was done in the interests of the province, they would not stoop to so low a level as making glaring and misleading statements with the purpose of deceiving the people. We hope that the pamphlet is not so barren of truth in all its pages as is page 41. One such falsehood should be sufficient to satisfy the highest ambition of any modern Ananias.

SOMETIME ago the Church of England appointed a committee to formulate a scheme whereby church architecture might be improved. It was felt that many of the churches which were being put up in different parts of the country might be very much improved in their architecture if some care was taken to select artistic designs. What this committee has done we do not know, but we suspect that it found the task too heavy a one to overcome. The Presbyterian Church has also appointed a committee with the same object, but little has been done, and it is very doubtful if anything will result from their attempt to improve the architecture of their churches.

It is an undeniable fact that ninety per cent. of our churches are entirely devoid of any artistic quality, and the greater number of the remaining 10 % are not what they should be. The reasons for the inferiority of church architecture are many. In the greater number of instances, the congregation are unable to build an expensive or even a moderately expensive structure. They must be satisfied with such a building as will accommodate their members and they can afford to erect. In a few instances they are satisfied with this, but generally they desire to have what they believe will be a beautiful building, and they erect one which may be very much designed, but which is simply ugly on account of its many useless and extravagant features. In the opinion of many, a building of simple parts is devoid of artistic merit, while the building of many parts is one of beauty. A building of simple, well-proportioned design looks so simple to the ignorant individual that he at once assumes that he could design one of equal merit, and that consequently it does not amount to much. The building of many lines, no matter how badly proportioned or how inharmonious, puzzles the same individual, and he immediately worships what he does not understand and believes he could not do. What a blessing it would be if the unnecessary architectural features on our churches, yes, and on our homes, were done without, and their cost devoted to other purposes of a legitimate character.

The impression is also prevalent that the services of an architect are not required when there is little money to be expended, that they are only necessary when a costly and elaborate building is to be erected. This is a mistake. The cheaper the building the more care should be taken with its design, and a competent architect should be able to design a small and simple church that would not cost much more than the very plainest and ugliest building which could be erected, plus his fees. Now the trouble lies in the fact that the congregation look upon money paid to an architect as so much lost, and the architect does not care much for the work of designing a cheap building, as it requires much more time and study than it would if money were more plentiful. The consequence is, that the thoroughly competent architect cannot afford to design such building at the remuneration that he can more costly structures, and he refuses to do the work, consequently such work goes to the incompetent, who are prepared to do it for the usual commission or very much less. The building committee cannot discern any difference between one architect and another, so they employ the cheap article. They have another reason for employing the incompetent man, for he will work into the building, provided he is able, all the pet ideas of the members of the committee, thus giving each member of the building committee the opportunity of claiming to have designed the building. The competent man will not do this, and therefore he is in their minds incompetent, besides being more expensive. It is useless to hope that affairs will improve very much until our people have some artistic perception. They all would like beautiful things, but they do not know what constitutes beauty. They have also an idea that art after all is a commodity which can be bought if they only pay enough. Believing this, they strive to obtain bargains, and not knowing the pure article from the counterfeit, purchase the counterfeit. Here and there a church of artistic proportion is erected. Such buildings will have an influence for good, and as more are built the artistic education of our people will be advanced.

The Vestry of St. Paul's Cathedral, of London, desire to improve the Cathedral. Instead of making intelligent enquiries to find the architect best able to do the work they desire to have done, they advertise a competition of such a character that no competent man, or in fact any man who respects himself or his profession, will have anything to do with it. The result will be a set of designs sent in from the least competent men, from which one will be selected; and the one selected will very possibly not be the best one submitted, as the Vestry is to be the judge of the respective merits of the designs. One would have expected something better from a city of the size of London than an attempt such as this to secure a design for alterations to an important building.

We have still another example of the methods adopted by church building committees to select an architect. A Presbyterian congregation of West Toronto Junction desired to build a church to cost about $30,000. The first thing they set about doing is to select an architect, and the method adopted was to put the work out to tender and obtain the man who would do it for the smallest remuneration irrespective of qualification. It matters not one iota to them whether the lowest bidder was competent or incompetent so long as he claimed to be an architect, and could show a set of plans. The full commission would be, say, $1,500, and if they could get it done for $600, well, it was just $900 saved in hard cash, though it might be that the return would be a building intrinsically worth only $25,000, or even as low as $20,000, for an expenditure of $30,000—the result, $900 saved, $5,000 more or less lost, and an inartistic building. The building committee first offered the work to an architect at the Junction if he would do it for $400. He refused this offer, but made a proposal to do the work for 3½ %. This offer was cut under, so we are informed, by one of the principal firms of Toronto, who were again cut under by a firm claiming to possess all architectural knowledge and willing to work for little or nothing. The work is being done for 2 % net, although there is some understanding that the building committee will pay 5 % and the architect will give a subscription of 3 % to the building fund. The building committee may have done a good stroke of business, but we are of the opinion that they will receive about 1 % of work in return.

This effort on the part of building committees to cut down fees of architects results in the erection of unstudied designs. The architect gives as little as he can for the little that he is offered, and thus gets even with his employers. The architect who takes a pride in doing his work as thoroughly as he can, and who devotes much time to the study of it in all its details, cannot compete with the man who is content to impose upon the community his first conception in an exceedingly crude form. Plans of the cheap architect are very much like store clothes, they may be showy and cheap, but they are not such as will result in a substantial or artistic building. Designs which are turned out like boots and shoes out of a shoe factory, are dear at any money. This difference would be more discernible if it were not that some architects of reputation, while they charge full fees, do not give value in return, but slur their work in a most disgraceful manner. These men are not working because of any love of their profession, but because they must earn a living, and the sooner they can make a competency the better, even though they do not give a fair equivalent. Generally speaking, this species of the architect gains the good opinion of the multitude, because it is money with him first and last, and he cares not what he does so long as he meets with the approval of his clients, be they ever so wanting in a knowledge of the æsthetic. He is prepared to work in all their whims, even though his reputation, such as it is, may suffer. A client should employ an architect not because he will approve of his client's notions, but because he knows his business, and insists on working honestly for his client's benefit even though pet ideas must be overlooked.

THE attention of the Dominion Government is called to the fact that the proper amount of duty, based upon the cost of the buildings, as provided for by the tariff, has not been collected upon the plans of American architects entering Canada. From a seemingly reliable source we are informed that not one dollar has been paid at the port of Toronto in the shape of duties on Mr. Waite's plans for the Parliament Buildings or the Canada Life Assurance Company's building, while in the case of the Canadian Bank of Commerce building duty was paid on an estimated cost of about $60,000, while the actual cost cannot have been less than four or five times that amount. It would appear as though Mr. Waite might claim among his other accomplishments as an "expert" that of being an expert smuggler. Plans for the Toronto Board of Trade building paid duty on an estimated cost of $200,000, which sum, however, will be largely exceeded. The Government should take steps to secure to Canadian architects the protection which the tariff was designed to afford them, and to the country the revenue of which it has been and is being defrauded. The authors of the plans for the buildings we have mentioned are well known, the approximate cost of the buildings can be determined, and if the plans have not paid duty they should be compelled to do so now.

A CORRESPONDENT of the Toronto *Globe* who misappropriately styles himself "Canadian," attempts a defence of Mr. Waite and the Ontario Government with respect to the erection of the new Parliament Buildings. Did our space permit, we might easily show the weakness of this effort to defend conduct that is simply indefensible. We content ourselves with repudiating the statement made by this writer that "if Toronto architects would do better work, we should not need to go elsewhere." The writer asks how many brick walls have lately tumbled about our ears? We have directed attention to one in another column, but singularly enough the architects are Americans, not Canadians. It is reported that owing to the condition of affairs on the new Toronto Board of Trade buildings, the American architects in question have been dismissed and the completion of the work placed in the hands of a Mr. Kent, a Buffalo architect, and a cousin of Mr. Wellington, one of the experts appointed on behalf of the Board of Trade to report as to the condition of the building. It is further reported that it will cost the Board of Trade upwards of $50,000 to make good the defects in construction. No such loss has yet resulted from the employment of a Canadian architect, and we are justified in saying that the proportion of competent men in the profession in Canada is equal to that to be found in the United States or elsewhere. Competency and incompetency are to be found in any country. The man who insinuates, as does "Canadian," that Canadian architects are all incompetent, while American architects are all competent, may be written down either a fool or a knave.

ARCHITECTURAL GUILD COMPETITION.

TWO designs were sent in, in the competition instituted by the Toronto Architectural Guild for a country church in the Late Decorated style. The committee of judges, Messrs. Frank Darling, R. W. Gambier-Bousfield and S. H. Townsend, placed the design under motto "Tyre" (Mr. Charles J. Read, Toronto,) first. We will publish the committee's report next month.

QUEBEC ARCHITECTS ORGANIZING.

ON April the 5th, a circular was issued calling for a meeting of the Montreal architects, the present time being thought opportune to form an Association. Some twenty-five members attended, and after a general discussion the following resolution was moved by Mr. M. Perrault, seconded by S. Lesage:

"That Messrs. Nelson, Hopkins, Taylor, Hutchinson, Raza, Doran, Hodson, Dunlop and Kesther, Sen., with C. Clift as Secretary, be a Committee to organize, and that they be instructed to communicate with the other architects in the province, and obtain their views and co-operation, the above Committee to report at a meeting to be called by the Secretary."

Owing to the severe illness of Mr. Clift, no meeting of the Committee was called until may the 8th, his duties being temporarily filled by another member of the profession.

The Committee are now framing a Constitution and By-laws to submit to a general meeting, which it is hoped will be called at an early date.

It is a pleasure to learn that a strong feeling prevails among the architects of the Province of Quebec in favor of a Provincial Association.

CANADIAN ARCHITECT AND BUILDER SERIES OF PRIZE COMPETITIONS.

THREE DESIGNS FOR FRONT FENCE.

"BROWNIE" and "Arm and Hammer" are nearly equal in excellence in their ironwork, but the wooden fence of "Arm and Hammer" is not good. It is a poor kind of commonplace in design, and not rightly applied to external woodwork.

"Brownie's" wrought ironwork is both more graceful than that of "Arm and Hammer," and the design is better adapted to the material. For these reasons we have considered "Brownie" to deserve the first place.

"Competitor," who contributes the only other set of designs, shines chiefly in rendering. His pen and ink work is perhaps better than that of the two first, but his designing is not well considered.

JOHN GEMMELL.
W. A. LANGTON.
R. J. EDWARDS.

The authors awarded first and second positions in the above competition are respectively Mr. Thomas R. Johnson, 74 Baldwin St., Toronto, and Mr. A. Ewart, 464 Besserer St., Ottawa, Ont.

ESSAY ON HEATING AND VENTILATION.

It is a matter of regret that only one essay was received in this competition. It is printed in the present number. The author is Mr. L. C. Ernest Page, 201 St. John Street, Quebec.

NOTE.

The author of the design awarded second position in the competition for details of a moderate cost house, is Mr. Chas. E. Booth, 138 Avenue Road, Toronto.

TORONTO ARCHITECTURAL SKETCH CLUB.

THE paper read by Mr. Edmund Burke before this Club on Tuesday, April 22nd, will be found in full in this number. After the conclusion and after a hearty vote of thanks had been tendered the lecturer of the paper, the decision of the club competition for "A Summer Cottage" was announced as follows:

Senior Section—First place, Ernest Wilby; Second place, A. H. Gregg; Third place, J. A. Radford. Junior Section—First place, J. Y. S. Russell.

The subject for the next competition was suggested by Mr. Darling, and will be the details for a large window 9 x 12 feet opening. The intention is to encourage a more thorough study of the architectural style and it should be productive of good results.

On Tuesday, May 13th, an address was delivered by Mr. W. A. Sherwood, O. S. A., on "Color in Nature and its Place in Architecture." Mr. Sherwood has made a special study of this subject, and many practical suggestions were thrown out. He pointed to Nature as the great master of color, and explained why all our color schemes should receive their motive from Nature's works.

Black and white, the prevailing colors in modern use, had most disastrous effects on the eye. In school rooms, for instance, no white plaster should be seen. The blackboards should be green with cherry mouldings and a brown border around. The furniture, and also the clothing of both teachers and scholars, should be of pleasing colors. Green, Nature's favorite color, should be largely used in decoration, its restful effect to the eye being well known. Motives could be found in Nature for every phase of architectural needs and necessities—the sky, the sunsets, the foliage of the trees, etc., each could give innumerable examples of what could be done.

Several members, including Messrs. Bousfield, Williams, Burke and Jones, spoke on the subject after Mr. Sherwood took his seat. Mr. Bousfield referred at length to the past use of color by architects of different ages and countries. Mr. J. P. Murray put a very practical conclusion to the proceedings by offering a prize to the members for the best scheme for decorating the walls of the Club room, the glaring whiteness of which had been referred to as sad examples of what should not be seen.

The vote of thanks then closed the evenings proceedings.

THE NEW TORONTO BOARD OF TRADE BUILDINGS.

THREE or four months since a portion of one of the walls of the new Toronto Board of Trade buildings gave way. Although the occurrence of the accident became known, particulars concerning it appear to have been carefully withheld from the public.

Statements which recently appeared in one of the daily papers, alleging that the accident was due to faulty construction, drew public attention to the matter, and the dismissal of Mr. Pudifin, the contractor, by the architects, followed a few days later. The latter disclaims all responsibility for the accident, and is seeking the aid of the courts for the purpose of vindicating his position.

An inspection of the building was recently made by a committee of gentlemen on his behalf, and subsequently on behalf of the Board of Trade by the well-known engineering expert, Mr. Wellington, of New York, and Mr. W. T. Jennings, City Engineer of Toronto. The result of these inspections has not yet been made known. Meanwhile all sorts of stories have been in circulation concerning the condition of the building. This was the natural consequence of the closing of the building against public inspection, and of what appeared to be a desire on the part of some of the officials of the Board to keep the condition of affairs a secret.

The work being in a sense one of a public character, we felt it to be our duty to seek to ascertain for ourselves and lay before

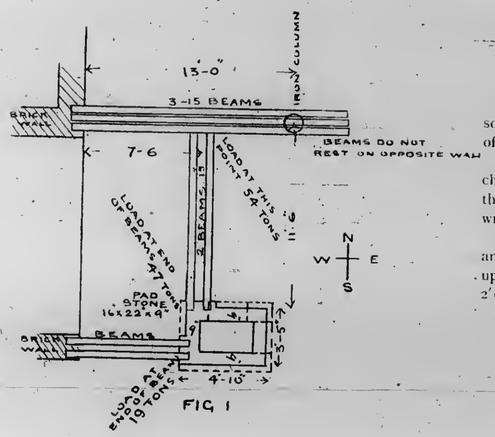


FIG 1

our readers the true condition of affairs so far as we might be able to ascertain them. Having obtained the consent of the President of the Board of Trade, we paid a visit to the building a few days ago with this object, and present below the different aspects of the case as we found them, without prejudice, leaving our readers to form their own conclusions in regard thereto.

On the east side of the building our attention was arrested by a heavy prop in a door way (fig. 5). There we noticed that something had evidently gone wrong, for the pier had been taken down and rebuilt in hard grey brick and cement. This, then, is the place where the accident happened, and we proceeded to follow it out according to the plans. On climbing the ladder to the third floor, it was found that instead of the brick walls shown on the plans, the partitions were built of terra cotta brick. But let us trace out the cause of the accident. At this point we find a load of 43 tons on end of beams, and taking the pad stone the same size as the others throughout the building—14½ tons per superficial foot. We now proceed to the ground floor, and find the size of pad stone for beams to be 1′ 6″ x 2′ 0″ x 10″, and the weight on the pier 80 tons, or 20 tons per superficial foot. This pier has at some time since the accident been taken down and built in cement. The points of weakness around here have been faced up with 1½″ metal castings. We are led to believe that this was an afterthought, and the reason for it is seen in Fig. 4. Another instance occurs where the casting had to be cut to fit around a beam. The cause of the accident has been ascribed by the architects to the additional weight imposed upon the building by the heavy fall of rain on the night of Feb. 4th being absorbed by the terra cotta of the floors. The rain fall on that night was 0.16, making the total weight covering the entire area of the whole building

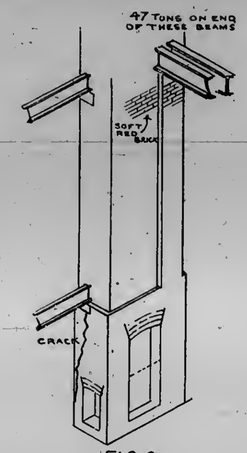


FIG 2

something less than 60 lbs, which was sufficient in the opinion of the architects to bring down the walls which fell.

A few yards northward there is a crack in the south wall of chimney on ground floor from floor to ceiling, and a walk round the chimney reveals the fact that there is something radically wrong here.

We go into the basement and find the walls only 14″ thick, and set off on ground floor line to 9″, and from this point run up about 100 feet. We find also on the east wall an opening 2′ 0″ x 2′ 0″ close to the ground, and a crack from floor to ceiling,

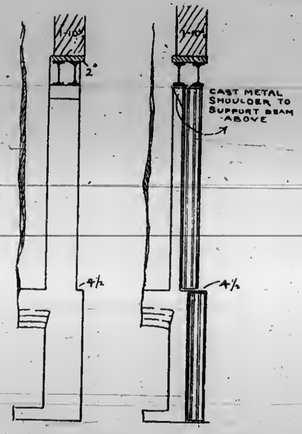
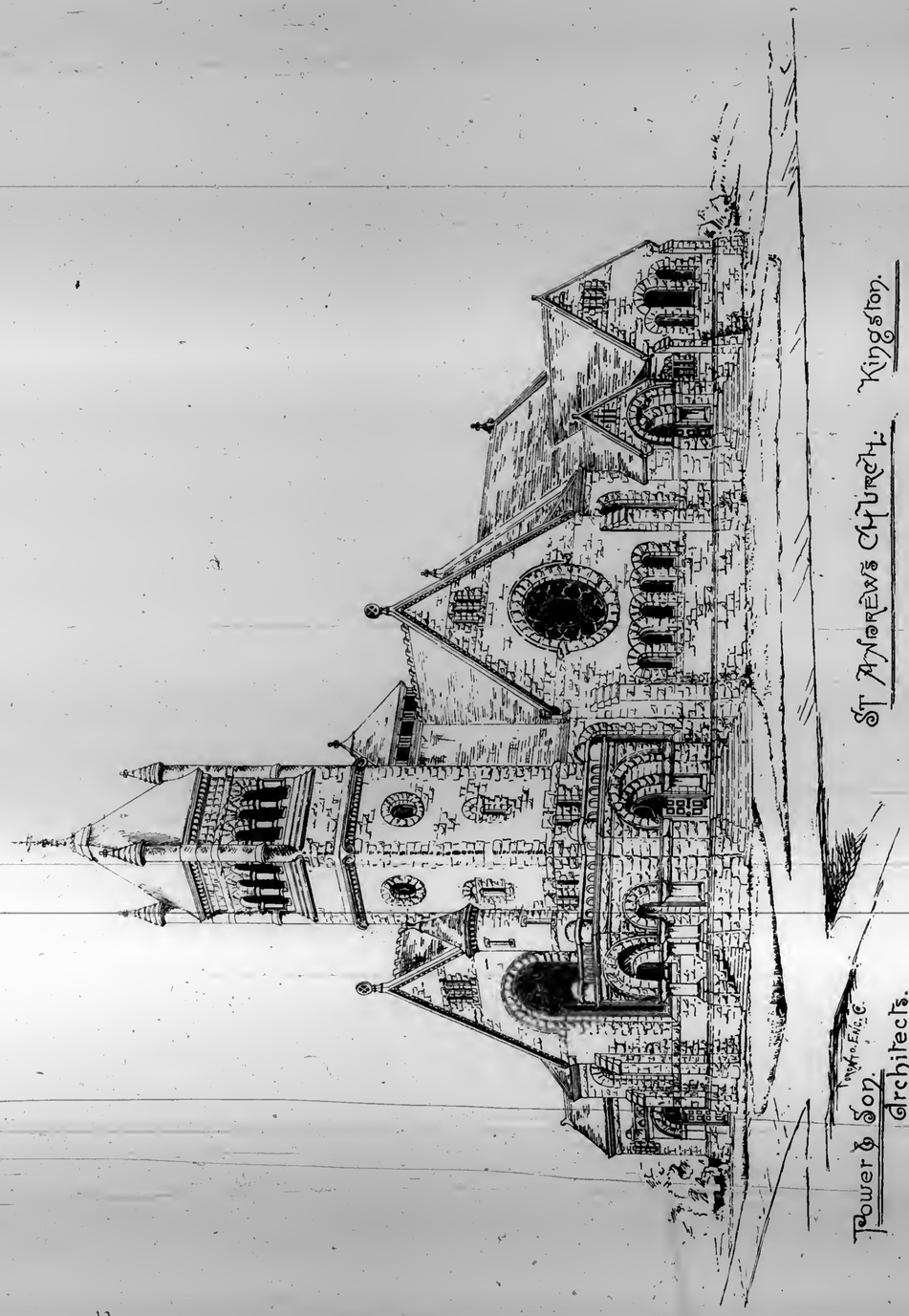


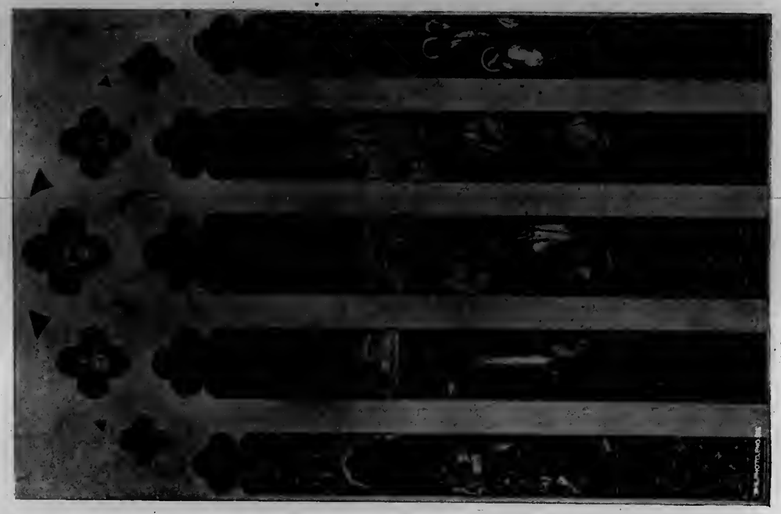
FIG 3 FIG 4

as indicated on Fig. 2. Upon crawling through this opening we were astonished to find another opening in the north wall, 2′ 6″ x 5′ 0″, and the top portion, as indicated by dotted line on Fig. 2, built up with straight joint, practically leaving the opening 2′ 6″ x 5′ 8″. Climbing up the inside of the chimney, we find it very rough, and on the south wall a "hog," whereby the courses are thrown 3″ out of level, and the weight transferred to



ST ANDREW'S CHURCH. Kingston.

Power & Son
Architects.



MEMORIAL WINDOW—ST. ANDREW'S CHURCH, KINGSTON, ONT.

INTERIOR ST. ANDREW'S CHURCH, KINGSTON, ONT.

a considerable extent to the southwest corner, which has already to carry, independent of its own weight and weight of floors, 19 tons. This probably is the cause of the crack from floor to ceiling in south wall on ground floor. The bond-stone on the west side is broken through the centre.

On the north wall of the chimneys to the depth of six courses, directly under the point where the heaviest load is transferred, as indicated in Fig. 2, there have been laid five courses of red brick that has crushed slightly under the load. One cannot see any earthly reason for this, as the rest of the chimney is built of hard, grey clinker bricks, the red brick being of a sandy nature, and much more liable to crush.

A glance at Figs. 3 and 4 gives the relative position of the face line of the superstructure with the work below. The set-off on the ground floor is 4½ at the first floor, the 1'-10½" wall that is carried on the beams sets over about 2". The metal

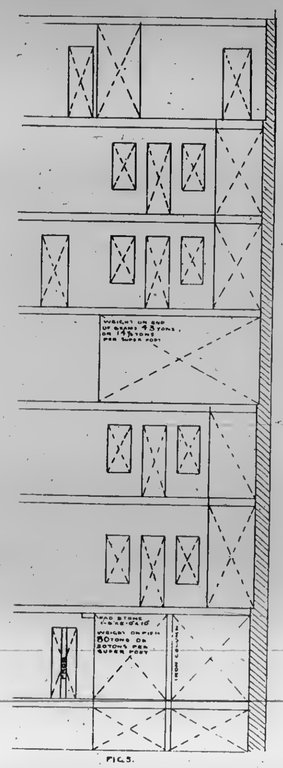


FIG. 3.

castings that have been placed up the face of this pier are similarly set over each other, and on the east side a metal shoulder has been cast on the column to catch the I beam above. The other ends of these beams rest upon one of the flanges of the three beams that run east and west, Fig. 1. One cannot understand the reason for carrying them in this manner, for practically the whole of the load comes upon the flange of one beam. There is no reason why these two beams should not have rested upon the top of the three beams running east and west. The three beams do not cross over to the opposite wall, but are cut off short, and there is no way in which they are stayed except by being bolted through to the other beams. They are supported in a stilt-like fashion upon an iron column. The load where these beams meet is fifty-four tons.

Through one of the windows overlooking the area we saw a bricklayer at work quite innocently cutting away the brickwork in the basement and weakening the bond to insert or withdraw a sill or something, and tons of masonry up above him. A glance upward reveals a very rough job of brickwork setting over in two or three places about ⅛ of an inch, and exhibiting in consequence a somewhat rustic appearance.

Walking along the corridor, we pass an array of iron columns arranged in Indian file supporting a stretch of 54 lineal feet of masonry and fire-proof flooring. At the north end of the corridor is an iron column supporting a weight something over eighty tons on a pad stone 3'0" x 2'0" x 8".

Fig. 2 is a plan of the chimney showing the position of the beams resting on the chimney.

Fig. 2 is an elevation of the chimney, looking at it from the north-east corner, showing the openings, etc.

Figs. 3 and 4 is an elevation of the north wall of chimney, showing the way the masonry and iron columns are first set back and then set over.

Fig. 5 is an elevation of the inside wall, with voids dotted diagonally.

The above loads do not include the weight of roof, and only 70 lbs. has been allowed per superficial foot of floor, which is only two-thirds of what should be allowed.

SOME NOTES ON HOUSE-PLANNING.*

BY MR. E. BURKE.

ONE of the first essentials in a good house-plan is simplicity. As a rule, the complex plan is that which has received the least study.

Messrs. Burnham & Root's plan for the Kansas City Exchange is remarkable for its simplicity as compared with most of the others in the competition, but it was the result of most careful study, revision and elimination.

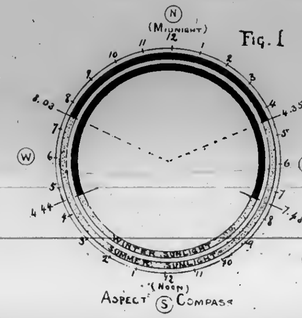
Their method of planning is to prepare several schemes, carefully compare each with the other, and finally select that which gives the greatest and best accomodation in the simplest and most direct form—having due regard, of course, to exterior effect. Usually a thoroughly good plan will compose well.

The writer, in preparing alternative plans, has almost invariably selected the simpler as being the most satisfactory solution of the problem, and has usually, in competitive work, been placed high or low in the scale in ratio to the simplicity or complexity of his planning. This point, *simplicity*, cannot be too earnestly insisted upon.

A poor plan, a crude plan or a complex one may be, and often is, a continual source of discomfort to the occupants of a house, especially to the wife, as housekeeper, and to the servants, while one which is carefully considered and thoughtfully put together, is of the most material assistance in the smooth-working of the domestic machinery.

To plan a house successfully, as Prof. Osborne in his little treatise on the Art of House-Planning, says: "We must understand the special wants and natures of the clients; and so must often, to be thoroughly successful, stand for the time being in the relation of father-confessor, to whom must be unfolded all the inner life of the family, the tastes and even peculiarities of each member of it, in order that the house may be molded to them, and not they to the house."

Fig. 1



Unfortunately, in these days of sudden wealth, we frequently have for clients those who have practically no individual tastes or preferences, and who can only explain their requirements by referring to Mr. So and So's house as being something like what they want.

It is a very interesting study to compare the house plans of different nationalities. Take the most familiar and accessible to us—the English and American. The contrast between English and American house plans may be accounted for, to a considerable extent, by the differing conditions of the labor market in connection with domestic service. The abundance of that description of labor in Great Britain has in the past contributed not a little to careless and diffuse planning, thereby increasing the work of the household, and necessitating a large staff of servants—and this often the case in unpretentious houses, and with incomes comparatively small.

The conditions of the domestic labor market in comparatively new countries, such as the United States and Canada, as well as the lack of means, have conduced to more careful and scientific planning—to the elimination of all unnecessary passages, extensions and roundabout ways, and to the invention of many labor saving appliances, which have been born of necessity.

Climatic conditions have also necessitated in the northern portions of

* Paper read before the Toronto Architectural Sketch Club.

this continent a more compact form of house for easier heating, while the roofing problem and the avoidance of snow-traps, has been the means of clipping the wings of many a flight of fancy planning.

In planning a house, the first thing to be borne in mind is the purpose it is expected to serve—that it must be fit to live in, and secondly, with the maximum of convenience and comfort compatible with the means available. There are certain rules evolved or developed by custom or convenience which govern the science of house-planning—simple when the wants are few and the house inexpensive, and gradually becoming more complex as wealth, expenditures and desires increase.

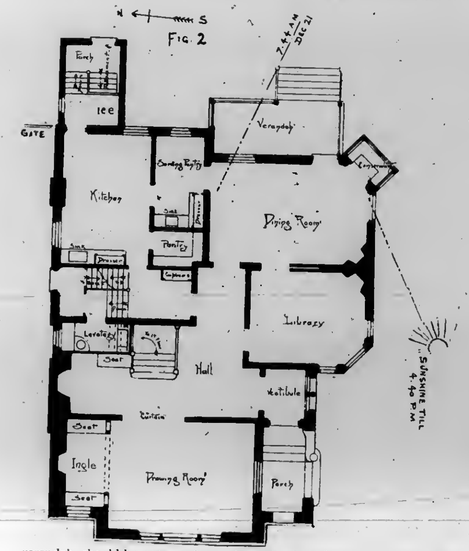
It will probably be of most practical use for us to-night to consider the planning of houses costing from five to twelve thousand dollars, as being the class with which we in the city have most to do.

Before proceeding with the analysis of the house-plan, a few moments devoted to the question of *aspect* will be advisable. "Beggars cannot be choosers," no more can the architect dictate to his client the choice of a lot, neither can everybody live on the sunny side of the street.

The ideal position of the dining room is on the south-east corner, the sitting or family room should be on the south side, or should have an uncovered south window; the kitchen should be on the cool side of the house and every living room (bed rooms included) should receive the direct rays of the sun during at least a few hours of the day. These are points which need to be constantly and carefully borne in mind.

The aspect compass (Fig. 1) so called by Prof. Kerr, author of the "English Gentleman's House," will be of material assistance in so laying out the plan as to obtain the maximum amount of sunshine in the various rooms. The direct rays of the sun are seldom disagreeable in the winter, and it is only the level beams of the declining western sun which, in summer more particularly, penetrate the house far enough to be disagreeable. The summer sun, during the mid-day hours, is so nearly vertical as to be easily kept out, while the mornings are rarely too warm for the easterly rays to prove uncomfortable.

The Entrance should have some special feature giving it such a measure of prominence as to leave no reasonable doubt in the mind regarding its purpose. It should not be a mere hole in the wall, and if at the back of a



verandah, should be so treated as to be easily distinguished from a jib-head window. If a choice be possible, a south or east aspect is preferable, thus avoiding the coldest winds which are from the north and west. A loggia or recess is a great protection from side winds. A western entrance may be made comfortable by having a porch with the opening facing south (Fig. 2).

The entrance should not be placed, in our climate, where it will receive the full effect of a snow slide from the roof. If a hood or porch is impracticable, a broad dormer may be located directly above the door, or a gable worked in to obviate or divert that which is always a dangerous nuisance. When a carriage porch is provided, it should never be so placed that foot-passengers will be compelled to wait while the carriage is being filled.

The hall should never, in our climate, have direct connection with the entrance door—a vestibule should be interposed. If the vestibule door can be placed at a right angle to the entrance it will tend to prevent the sweeping of a sudden gust of wind through and chilling the house, should both doors happen to be open at the same time, (fig. 2). The nearer a square form, the more convenient, as a rule, will the hall be, requiring less travel to reach any particular room, also making easier the heating of the house.

The stairs should be so placed as not to expose the upper hall to view from the entrance, and where practicable, a semi-concealment of most of the staircase is both preferable and more picturesque in effect.

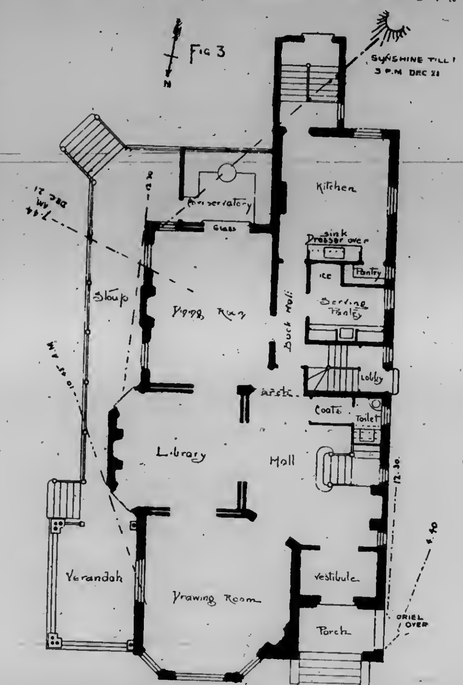
Where a hall-fireplace is introduced it should be in a cosy nook away from drafts. If this cannot be secured, it would be as well to omit the feature.

If a lavatory cannot be so placed as to be inconspicuous and out of hearing, its absence is to be desired.

Where the ground floor accomodation is limited to three rooms, the reception or drawing room should be the readiest of access from the entrance. It would often be most inconvenient to be compelled to lead a chance caller to the reception room past the door of a family apartment such as a sitting or dining room.

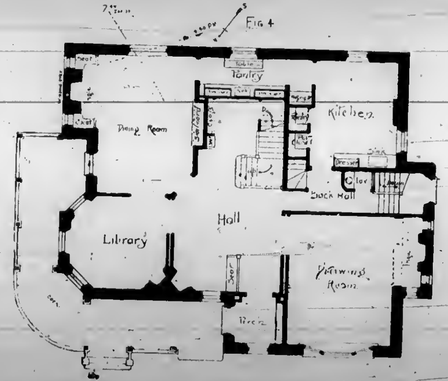
The drawing room should not be square in plan, but: if necessarily so, it can be greatly improved by the judicious location of a bay or ingle, or even in the grouping of windows and placing of doors. It should also if possible have more than one doorway—two doorways, even should they open into the same hall, are of great help in the entertainment of a considerable number of guests.

Irregularity of plan is also of great assistance to a hostess, breaking up a



company into separate groups. Irregularity of plan, however, should not be carried to the extent of leaving insufficient wall space for furniture, two large spaces at least should be provided for the larger and more cumbrous articles.

Where means and space permit, a reception room, in addition to the drawing room is desirable, and may open into that apartment with portieres, or for greater privacy with sliding doors, the drawing room may then become the more retired apartment and be used, to a greater extent, as a



family room. In most houses of moderate cost, the second room usually becomes the sitting room and library combined. Of course when the head of the house or some member of the family is of decidedly literary tastes, it becomes necessary for the proper prosecution of his reading, writing or study to have a special apartment, be it ever so small. When absolute seclusion is desired it may be necessary to locate the library on the first or even on the second floor. The family sitting room is convenient to be rather square in form, permitting a group to form around the table, and it may be made a more interesting room by the addition of an ingle-nook, or

by a bay where a good view is to be obtained. It should be the cosiest room in the house, facing south, when practicable, and when attainable have a view of the sunset.

The dining room is one of the most important divisions of the house, and should always receive special attention in planning. Where a breakfast room is provided, the question of the aspect of the dining room is not of so much importance, except that it should never be dependent on the west for its sole or chief light. The level rays of the declining sun would make a room thus lighted very uncomfortable for its occupants at the evening meal, while in summer the room would be made disagreeably warm. The south-east corner, as before mentioned, is the most pleasant position for the dining room, it being, in the majority of homes, used also as a breakfast room.

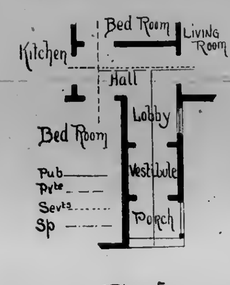


Fig 5

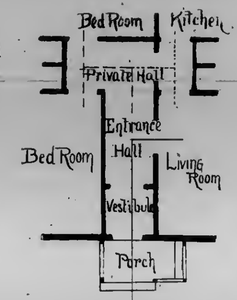


Fig 6

Where the room is, of necessity, placed on the south side, a bay window will be of advantage in catching the rays of the early sun. When placed on a north-east corner, the period of sunshine may be lengthened by a similar device. The entrance to the dining room should be removed somewhat from the main thoroughfare (fig. 2), and out of the range of a chance caller or unbidden guest—in fact it should be a truly family room, to which only the specially invited guest may have access. The inevitable odor of cooked food will also be less likely to make its presence noticeable. Unless the house is limited to two rooms, it is better that the dining room should not open into a reception room. It is often convenient and pleasant to have it in connection with the family sitting room, but doors should always be provided in order that the room may be effectually disconnected at will. The connection with the kitchen should never be direct, but at the same time the distance should be as short as possible, consistent with the proper isolation of the culinary department. The break should consist of a short hall or a service pantry, or better still, a combination of the two, and the doors should not be opposite each other, in order to prevent a direct view by a guest of the interior economy of the cook's domain. If the kitchen abuts directly on the dining or other rooms, the wall should be deafened to prevent the inevitable kitchen sounds being heard. Sometimes closets can be interposed.

The minimum size of room sufficient for six persons is about 12 x 14, and this would only be possible with any degree of comfort where the fire-place and sideboard are placed at the ends or corners of the room. A good width is 14 to 15 feet, and 16 or 17 is quite sufficient for any establishment less than a palace. 2' 4" is considered the minimum allowance required for each

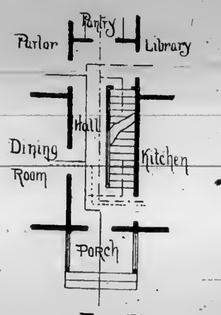


Fig 7

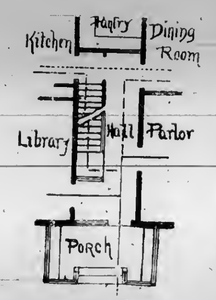


Fig 8

guest at table, and a dozen may be comfortably seated in a room 20 feet in length. The fireplace should be so placed as not to be a source of discomfort to the occupants of the table—for this reason it is better to place it at the end or corner of the room. If means will permit, an ingle may be introduced, removing all cause of discomfort, and making a cosy nook for an after-dinner chat, (fig. 4).

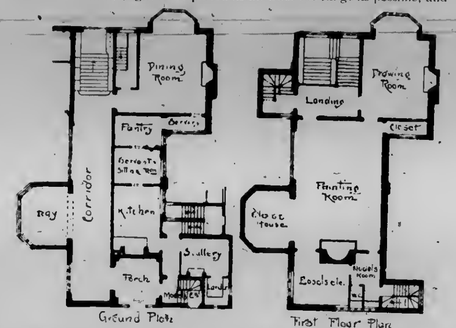
The position of the windows is of decided importance, and the injudicious disposition of them may prove a source of discomfort. Light from the end of the room is the most pleasant, but one person being in shadow. The windows should not be grouped, and should have a central blank space of considerable size. Where the room is long, it will be advisable, if practicable, to introduce a side window, which should be placed towards the opposite end.

The plans shown indicate the simpler method of disconnecting the kitchen, (figs. 3, 4.) Where the size of the establishment permits, it may be made more complex. For instance, the cook's pantry may be interposed between the kitchen and the butler's pantry, and the only connection a hatch or pass window between the two pantries, thus forming an additional barrier to the passage of kitchen odors.

If the kitchen be placed in the basement, the dumb waiter should never be carried directly from it to the dining room—it should be located in a separate room or pantry on both floors. The service pantry should be large enough for a commodious dresser for china, etc., and for a sink with drainer.

A refrigerator in or near the service pantry is also a great convenience, saving many a journey to the cellar and enabling the mistress of the house to retain control of many a dainty which would otherwise become the property of some "follower" or chum of Bridget. A mistress' pantry, even though small, is for a like reason very desirable.

The kitchen, as before mentioned, should be convenient of access to the dining room, should be placed, if possible, on the cool side of the house, lighted on two sides—preferably opposite—to permit of cross draught and good ventilation. The windows should not overlook the verandah, entrance or lawn, unless set up too high for vision. The kitchen table, when meals are eaten from it, ought to be placed as far from the range as possible, and



in such position that a cross draught may cut off the heat, thus making life in this apartment more bearable. A small room for use as a servants' dining and sitting room is a great boon, and conducive to long and contented service. Like the kitchen, it should not overlook the lawn, etc., and it should be placed near the kitchen.

The fixtures in the kitchen should be placed as much as possible to one side of the room, away from the line of traffic, and should consist of the range, sink, drainer, table and dresser; a small second table and a gas stove are additional conveniences for which space should be planned. If no laundry is provided, fixed tubs should also be placed in the kitchen. The most convenient position for the laundry or wash room is on the same floor as the kitchen; it can then, also, be used as a scullery, relieving the kitchen of the dirtier portion of the work. When the laundry must be placed in the basement, it should be approached by outside steps, protected by a porch, only a few steps being then necessary to reach the yard; passing through the kitchen will thus be avoided. The same porch may be made large enough to contain also the steps from the kitchen door to the yard.

If possible to be avoided, the back or servants' stairs should not lead directly out of the kitchen, as in that case they become a sort of flue to draw all the odors to the bed room floor. A back hall should be arranged to contain these stairs; when this hall connects with a side entrance it should have a vestibule. It is well to so place this entrance that persons using it will not require to pass through the yard, the gate to which may be kept locked for the exclusion of tramps and clothes thieves.

Some of the points referred to may seem trivial when taken up in detail, but none are beneath the study of a careful and painstaking architect, and

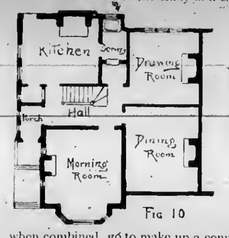
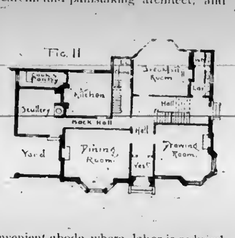


Fig 10



when combined, go to make up a convenient abode where labor is reduced to a minimum, and where everything has a place and a place is provided for everything.

Time has not permitted of reference to the upper floors. There are many points demanding careful study in the planning of the bed rooms, the location of the bath and dressing rooms, wardrobes, closets, etc., which will well repay careful study. The four sketches (figs. 5 to 8), taken from Prof. Osborne's book, show graphically the anatomy, as it were, of the thoroughfare, and its relation to the various functions of the house. It may be laid down as a safe rule, that if the analysis of a given thoroughfare plans results in confusion, a mixing up of guests, family and servants, it is a proof that it is imperfectly developed and demands further study. The dotted and solid lines on these plans indicate the routes of the three classes.

The plans of an artist's house, by Norman Shaw (fig. 9), are admirable in the disposition of the thoroughfare, the isolation of servants' apartments and suitability for the purposes of entertainment and the display of statuary, pictures and bric-a-brac. The position of the kitchen in relation to the dining room is scarcely in accord with our ideas of convenience.

Two plans (figs. 10 and 11) of English houses are given as examples to be avoided, and as showing a complete lack of study of the scientific disposition of the thoroughfare plan—very slight and obvious changes would result in less work for the servants and far greater comfort for the members of the family.

MONTREAL.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

THE most exciting event of the past month has been the total demolition by fire of the Longue Point Lunatic Insane Asylum. The particulars of the fire and the building have already appeared in almost every paper of the Dominion, and therefore require no further description. It seems almost incredible that a building containing so many human lives, practically helpless and caged behind iron bars, should in this 19th century be so wholly devoid of fire protection. It strikes me that if any buildings should be fire-proof or provided with appliances for fire protection, surely an insane asylum or hospital ought to be placed in such a position as to be impossible to be damaged by fire. In the case of Longue Point Asylum somebody is certainly at fault, for this institution being practically endowed by the Government, they should have taken such steps as were necessary to be certain that the building in which they placed the weak minded people of the province was thoroughly protected against accidents by fire. It is to be hoped that this calamity will be a lesson to all connected with our public institutions to see that their buildings are properly protected; in fact the Government ought to spare no expense in having all public buildings, such as asylums, hospitals, schools, convents and hotels examined, and their owners compelled to have them properly protected.

CANADIAN SOCIETY OF CIVIL ENGINEERS.

The Canadian Society of Civil Engineers held an ordinary meeting on Thursday last at McGill College, where a paper was read on the generation of power and light by electricity by Mr. Lawson. There was a good attendance and an animated and interesting discussion will likely take place on the paper at the next meeting.

It was announced at the meeting that owing to the burning of the Toronto University and the absence of Colonel Gzowski, the Branch Society recommended that the summer convention be not held in Toronto this year. The probability is that there will be no summer convention take place this year.

FLOOD PROTECTION.

The commissioners appointed by the Government to examine and report upon the plans for flood protection and harbor improvements have so far done nothing. The explanation given is that Mr. Keefer is absent and Mr. Page is too busy with departmental work. The citizens are quite indignant at this treatment, and think that the members of the commission should either not have accepted the position or have immediately proceeded with their work. A deputation, including the Mayor and members of the Board of Trade have just interviewed the Government urging the appointment of a new commission; the Government have taken it into their consideration and a favorable answer is daily expected.

CONTRACTS.

Contracts for the new Victoria Hospital are not yet let. Rumor has it that the tenders are far in excess of the estimates, and that the plans will require remodeling and new tenders taken before the work proceeds.

MOUNT ROYAL PARK INCLINE RAILWAY.

The Directors of this railway have at last secured permission from the City Council to erect their station on Fletchers' field near the Golf Club House, and are pushing on the construction with all possible despatch. They hope to have cars running by the 24th inst. It is a great pity while they are at it that they did not ask permission from the City Council to run their cars to the corner of Craig and Bleury St. It would be a great convenience to the public, and without additional charge would pay the company handsomely for their outlay.

THE CARPENTERS' DEMANDS.

I hear that the carpenters propose to hold a meeting to-night to demand the eight hours movement from their employers. It is stated that if not acceded to they will go on strike on Monday. This I hardly think probable, as there are more men than work at present and it would be a very bad time for the men to act thus. Personally I believe in the eight hour system, if not abused. It is rather hard for the laboring man to have no time for recreation or self improvement. Take for example a man living in St. Jean Baptiste Ward, he requires to get up about half past five in time to get breakfast and be to work by seven o'clock. As a rule men live a long distance from their work. They leave off at six o'clock, thus making it nearly eight o'clock p.m. before they get home and have their supper; thus no time is left them to take advantage of night schools or any amusement, I would prefer to see all compelled to stop work at five o'clock and to have every Saturday off, but what I fear is, that even if the men's demands are granted, the object will be defeated by "the boss's" not compelling the men to stop work at the proper hour, but holding out inducements to them to work overtime.

REAL ESTATE AGENTS.

The real estate agents of this city are greatly excited by the fact that a firm of estate agents here have petitioned the City Council to impose a special tax upon all real estate agents. They claim the object is to wipe out all the smaller men, and to allow the wealthier members to control the business. Petitions opposing the tax are being presented to the City Council by those interested.

Mr. Dennis O'Brien, contractor, has taken out an action for damages against the syndics of the parish of St. Antoine de Pardou for $10,000. He alleges that they illegally took away from him his contract for building a church without any plausible reason.

STEREOTOMY.

STONE-CUTTING.

By JOHN A. PEARSON.

PART II.

THE RECESSED FLAT ARCH OR PLATE BAND.

AN arch is an assemblage of blocks, mutually supporting, by means of radiating joints between them, and side supports to withstand the lateral thrust. When the arched surface usually curved, is plane, the structure is called a plate band. Fig. 5 is the elevation and Fig. 6 the plan of a rectangular opening through a wall. The joints A, D, U, W, divide J, T, into equal parts and radiate from the centre O, which is arrived

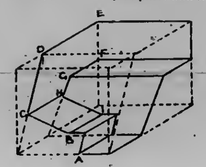


FIG. 5.

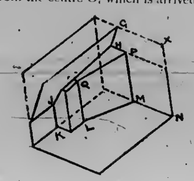


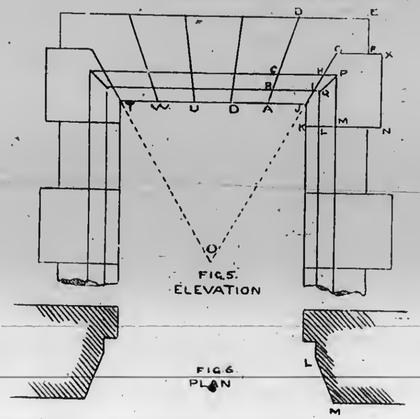
FIG. 4

at by making the O, J, T, an equilateral triangle. The lapping over of the first arch stone at G, F, on the jamb springer is designed to give greater security.

Having set out the plan and elevation, it is required to work the jamb springer, K, L, M, N, X, G, H, I, J, and the first arch stone, A, B, C, D, E, F, G, H, I, J. Fig. 3 is an oblique projection of the first arch stone, looking at it obliquely upward, so as to see its front right hand and under surfaces.

Fig. 4 is an isometrical drawing of the jamb springer, showing the front and left hand surfaces. The different faces will be clearly traced by the corresponding letters on the elevation.

There is no exact order of operation, but the top bed being the largest surface, we should naturally bring that to a plane face by the method explained in our last number. Having accomplished this, we should then work the joint, A, B, C, D, with a shiftstock set to the angle caused by the



radiating joint A D, and applied on the top bed D E. Then the face D, C, G, F, E, should next be worked perpendicular or square to the top bed. Having finished this, we can now inscribe our face lines E F, F G, G J, H C, I B, J A. We cannot apply the mould used on the bed of the jamb stones to the radiating joints of the arch stones, so by square, trammel and guaging we can obtain the points on the joints of the convergent face, and the square check.

TO WORK THE JAMB STONE SPRINGER.

We commence first on the bottom bed of the jamb, and next work the face M, P, H, G, X, N, perpendicular to it. On this surface apply the face mould, marking the mitre and return of convergent face. Now work the joint J, G, at right angles to the face, carefully noting that the square on being applied is set at right angles to the arris J, G. A draft M, P, can now be raised, holding the chisel at the proper angle so as not to undercut the face; then with a shift-stock set to the angle M, L, at P., sink a draft, P Q, and work the face through; then with the distance, M, L, marked at P Q; run the draft L Q, and the draft K, J, squaring these faces with each other by a set square.

The top joint, G, X, and side joint X, N, may now be worked, completing the whole. It is the better plan where a mitre occurs, as in this case, to leave about ⅛ of an inch rough to be pared when the stone is set.

SANITATION & HEATING

"CANADIAN ARCHITECT AND BUILDER" COMPETITION ESSAY ON HEATING AND VENTILATION.

By "ZEB."

THE subjects of heating and ventilation should always be inseparably considered in the construction of any edifice designed to be inhabited; and the reason for this is obvious, since one system is so dependent upon the other for its action.

ESSENTIALS OF HEATING AND VENTILATION.

We do not find the essentials which insure a good working of both systems to exist always together. The reason of this may be found, sometimes, in the misplaced idea of economy of a proprietor, but most often, it results from the difficulty experienced with some, of applying a properly selected system to suit each particular case.

We may conclude that, the object of the two systems being not only to provide comfort for the home, but above all to make it healthy, the selection of a proper mode is most important, and that the qualities necessary to secure the above ends are: that the apparatus should be docile of management, permitting to obtain at will any degree of heat required; also, that notwithstanding the variations of temperature which may result therefrom, the air in the room should maintain an even standard of purity with the absence of any discomfort from draughts of air

APPARATUS FOR HEATING.

Every system has its friends as well as its enemies; only, some would have fewer opponents if a bad application of them was not so often made.

No particular system will give scientifically perfect results, but some get nearer to it than others.

The Chimney.—Owing to the climate in this country, little difficulty has ever been experienced in constructing a chimney which will act well. The section of a chimney should be square or perfectly round, as such forms insure a more even warming of their inner walls, and prevent, thereby, counter currents of cold air descending the flue, as happens sometimes when the section has the form of a parallelogram and is too large. We need not insist that a tall chimney will draw better than a short one. The diameter of a flue for an ordinary room need not exceed 6 or 8 inches, and the velocity of the draught should not be more than six feet per second; Galton recommends that one square inch be allowed for every 50 or 60 cubic feet of space.

With inlets for fresh air, chimneys will always draw well.

Fire-places will always be popular, but the main drawback with them is the difficulty of renewing the fresh air in the room to replace that carried up by the chimney in sufficient quantity without causing some draughts of air. To obviate this inconvenience many forms of chimneys have been invented, the best known of which is that of "Galton's" constructed with a false back, forming an air chamber, communicating with the outer air which permits it of delivering in the room about the same amount of fresh warmed air as escapes by the chimney. This form is more economical also than the common one, as giving with the same amount of fuel about 30 per cent. more heat.

Stoves and Furnaces.—These two modes have prevailed at one time to a greater extent than they ever will again. One of the greatest objections to their use is that they provide air at an excessive temperature on its entering the room. An even and constant temperature is also difficult to obtain with the hot air system, for the least change in the intensity of the fire is instantly felt at the register, either by a diminution in temperature or an excess of it, as the case may be. True, in the latter case, the heat can be checked by closing the register, but the supply of air is affected and ventilation ceases. General Morin suggests as a cure to this objection that the regulation of the temperature of air before entering the room may be obtained by having a mixing chamber where cold air is admitted when necessary, thus giving more comfort without affecting ventilation. But the main drawback with this system is the difficulty of accomplishing an even distribution of heat throughout the house. It has been observed (Michel Levy, *Traite Hygiene Publique, 1879*) that, "in places where furnaces are used, the inmates show unmistakable signs of anemia, and that such a fact has also been observed among all classes in those countries where porcelain and iron stoves are in use." How far this may be true in regard to this country we are not prepared to say. It is conjectured, however, that the nature of the air is changed by coming in contact with an intensely heated metal surface, but the precise nature of such a change has not been yet explained, but it is known that the uncomfortable feeling resulting from the aspiration of such air is due in a measure to the fact that its power of absorbing moisture is then greatly increased (which is equivalent to its being made dryer). Hot air is disagreeable when it contains less moisture than 50 per cent. of its point of saturation (Peclet), though this standard may vary according to circumstances.

STEAM HEATING.

This system is no doubt superior to stoves and furnaces in many ways, but it is not without possessing some disadvantages, too. One of them is, that no heat is obtained in the radiator until the water in the boiler has reached the boiling point (212°). This in itself is no serious objection, but the fact that the temperature of the radiators must always be that of steam *is* a decided objection in some particular cases. Then a vigorous fire must always be kept up so long as any heat is needed, otherwise, the temperature lowering, the supply of steam ceases, and the radiators cool instantly. The noise in the pipes resulting from the condensation of steam can be pretty well overcome by the use of automatic valves.

It has been observed by an author (Dr. Billings, Boston), that "more constant and skilled supervision is necessary with this apparatus than with the hot water system." The rapidity with which heat can be radiated and the great power of the system certainly favors its adoption in many cases in preference to the other systems.

It can also be applied to ventilation, but as such application is costly and extensive its adoption will scarcely ever be made outside of large establishments. We have read of such an application to a theatre in Hamburg, if we mistake not. It consists in having all the radiators placed in a large chamber situated below the pit of the house; the hot air from this room is supplied to different parts of the theatre above by ducts and orifices in the floor. The temperature is regulated below by partly controlling the inlet of cold air, and also by having a greater or less number of radiators in operation at a time, as circumstances may require. A system analagous to this is in operation in the John Hopkins hospital in Baltimore.

HOT WATER SYSTEM.

This is the system *par excellence*, and which is growing in favor every day; though it is not recent, for the first apparatus used for this kind of heating was invented in France by Bonnemain towards the end of the eighteenth century.

The circulatory movement of water through which heating is secured by this system, depends upon the difference in density between hot and cold water; thus it is, that water after being treated in the boiler ascends the pipes, and as it cools in its course through the radiators, returns to the boiler and enters it at the base. The chief advantage of this system lies in furnishing a more constant and milder temperature, with less fire and care than is possible with any other mode. Its facility for regulating the temperature by simply controlling the flow of water in the radiators is no less in its favor. The system is less fickle than any other in its action on account of the great mass of water contained in the pipes being once heated, does not cool very rapidly if the fire should get low, for, once hot, it will require a comparatively small fire to keep up a good temperature. It is calculated by some that after the fire is out the temperature of the room will be maintained five or six times longer than is possible with steam under similar circumstances.

We may summarize as follows: That every system possesses some bad points as well as advantages. The improved form of chimney such as already mentioned is a great adjunct to ventilation, besides its heating qualities, but it would be best in some cases to have some other means of heating at command besides it.

Of the hot-air system, we cannot say much beyond the fact that its promptness and vigorous power may recommend it in some cases, but the difficulty of distributing heat evenly, already mentioned, may sometimes prove a great objection.

The steam system possesses the advantages of the hot-air system without some of its faults. Its application commends itself to those large edifices which require to be well heated at short notice and for short intervals.

Hot-water should in general be preferred to any other system, especially for the home, it being considered less costly and more easy of management than any other.

Pure air is an absolute necessity for the maintenance of good health. We will not cite any example in support of this beyond

the fact that "a deprival of fresh air produces phthisis." Parke says, that "the practical limit of purity will depend on the cost which men are willing or able to pay for it," and that "it may be fairly assumed that the quantity of fresh air supplied to every inhabited room should be great enough to remove all sensible impurity, so that a person coming from the external air should perceive no trace of odor or difference between the room and the outside air in point of freshness."

We might here relate how air becomes contaminated by carbonic acid gas from human respiration, or the many other causes; also of experiments which have been made in endeavoring to establish some standard of purity which internal air should have, and the widely different results arrived at by different authors. We might also cite tables giving the cubic amount of fresh air per head which should be alotted under different circumstances; but all data on this point is within the reach of anyone in the numerous treatises on hygiene, and we consider it unnecessary to repeat it here. It will suffice to say that hospitals, theatres or any edifice where a large number of people assemble at a time, require per head a greater amount of fresh air per hour than is necessary in an ordinary dwelling; in which latter case it is fixed by DeChaumont at 1 cubic foot per second for each man as the minimum allowance, but we think this might be reduced.

A very large apartment is more difficult to heat and ventilate than a small one, but a moderate sized one will give the best results all round. We know that when air is changed more rapidly than three times in an hour, it occasions draughts in the room, though this is somewhat dependent upon the degree of temperature at the time.

It is evident after all the above considerations that in order to have a comfortable and healthy room, we must harmonize the workings of the heating apparatus with that of the ventilating system, and both of these to the size of the room in relation to the number of its inmates.

The introduction of fresh air should in preference be made at the ceiling than at the floor line (Morin), though the opposite mode has been known to give good satisfaction. All air entering a room should be filtered through a fine guage to remove its coarse impurities before its introduction in the room. Ducts should be so designed that the air will have an equal distance to travel in them all.

MODES OF VENTILATION.

There is the artificial and natural mode. The latter is the natural operation of a change of air which is due to a difference in density between internal and external air; the mode is very good in winter, but it should not be altogether relied upon in the summer season, when the outside temperature is often that of the house. Natural ventilation is obtained in many ways which are well known; but the most common is by depending on the opening and shutting of doors, cracks around windows, &c. It is mainly achieved, and better, by chimneys and shafts constructed for the purpose. One good way of many, of getting window ventilation is by fowering the top sash a little and lifting the lower one a few inches, the upper layers of air in the room being lighter in density escape at the top opening, while it is replaced by a fresh supply entering at the bottom, where the draught is checked by a board put in front of the opening to change the direction of the current.

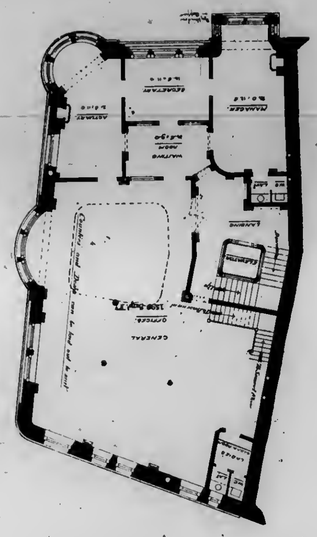
We can say that hot-air heating is a mode of natural ventilation. Astonishing results in ventilation are obtained by burning a gas jet in a chimney shaft. Morin says, that with 7 ft. cubic of gas burnt per hour in a flue eleven inches square and 66 ft. high, 13,300 cubic feet of air will be drawn from the room.

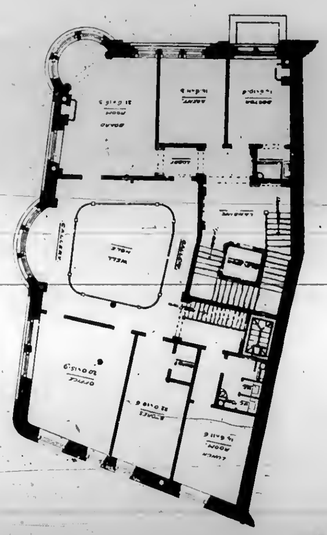
ARTIFICIAL VENTILATION.

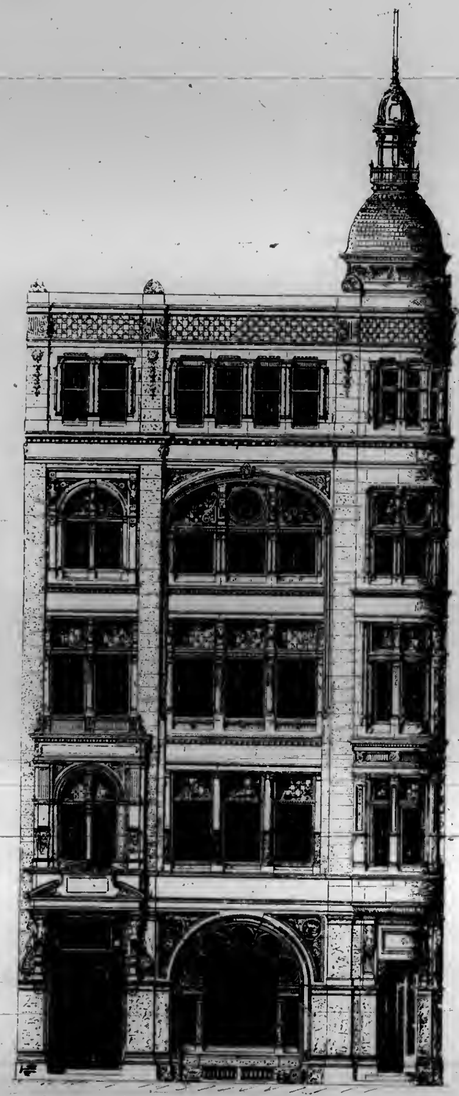
This mode is accomplished either by pulsion (forcing air in the room), or extraction (aspering the air). In both cases the action can be secured in different ways, such as a jet of steam, etc., but most commonly by the use of a "fan" put in rapid motion by some motive power. These modes are used only where the space to be ventilated is very considerable, where natural ventilation would not be sufficient. When only one of these modes is used, preference is to be given to pulsion; but they are sometimes combined, as was the case in the "Palais du Trocadero" during the Paris Exposition of 1878, where ventilation was most perfect. The main point of excellence of natural ventilation, and which is not possessed by any other system is, that it can be depended on for a given result per hour, independently of outside temperature, or the direction of prevailing winds.

Competency in putting up a system, either of ventilation or heating, is not possessed by all those who lay claim to it; and this results sometimes in a good apparatus failing to give all the satisfaction which it otherwise might, whereas, if the work were properly executed, it would often effect not only an increase of comfort, but also a saving of expenses in working the system.

We have answered sufficiently, we think, the spirit of the competition for which this "essay" has been written, in restricting ourselves to treating simply of the principles on which the different systems are dependent for their action; and of the nature and value of the results as given by each under ordinary management, as compared to what should constitute good heating and ventilation, leaving out the question of the varied modes of application which can be made of each system according to circumstances. For example, as in hospitals, quarantine stations, schools, etc., etc.; it would require quite a series of articles to treat of these questions separately.







COMPETITION FOR OFFICE BUILDING FOR THE SUN LIFE ASSURANCE CO., MONTREAL.

Second Premiated Design.—M. T. Thomas, Architect, Montreal.

CANADIAN ARCHITECT AND BUILDER

FINE AND INDUSTRIAL ARTS · DECORATION · FURNISHING
CONSTRUCTION · SANITATION · ENGINEERING

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EDITOR'S ANNOUNCEMENTS.
Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The Ontario Association of Architects has appointed the "Canadian Architect and Builder" its official paper.

The publisher of the "The Canadian Architect and Builder" desires to ensure the regular and prompt delivery of this Journal to every subscriber, and requests that any cause of complaint in this particular be reported at once to the office of publication. Subscribers who may change their address should also give prompt notice of same, and in doing so, should give both the old and new address.

THE recent heavy rains are said to have caused severe loss to brickmakers in Toronto and its vicinity. A very large proportion of the bricks intended for burning in the second and largest kilns of the season were dissolved into a shapeless mass, and in consequence bricks this season at least are likely to be at a premium.

THE Canadian customs authorities are at present very much exercised in attempting to prevent the importation of an alleged scandalous American newspaper. Might we be allowed to suggest that a matter of greater importance awaits their attention, viz., the method by which the American architect of several large buildings now in course of construction in Canada succeeds in getting his plans for the same into the Dominion without paying duty thereon. The protection which is supposed to be afforded Canadian architects by the tariff will be of no benefit whatever until steps are taken to prevent the wholesale smuggling which for several years past has been carried on under the noses of the customs officers.

DOMINION Government engineers recently visited Montreal and examined the plans, etc., in connection with the proposed scheme for the improvement of the harbor. Their report, which has just been presented to the Minister of Public Works, states that owing to the variable effects of the ice flow—being seldom alike for two consecutive seasons—care should be taken not to rely upon uncertain theories. It is recommended that careful study should be made of the valuable information obtained under the direction of the Montreal Flood Commission of 1886, and of the action of the ice in the harbor in connection with any projected work of improvement in the upper part of the harbor of Montreal before the Government could be advised to sanction unconditionally the construction of any such work.

WE have several times called attention to the fact that the building by-law of the city of Hamilton as a dead-letter. It provides that within certain defined areas no materials other than iron, stone or brick shall enter into the construction of new buildings or additions to existing structures. Also, that the plans must be submitted to and have the approval of the Building Inspector, on whose permit alone the construction of the building may be undertaken. A few days ago a citizen summoned a neighbor before the courts for having violated the law, when the judge's enquiries elicited the information that although the by-law had been in existence four years, a Building Inspector had never been appointed, and in the absence of the necessary machinery for putting it into operation, structures of every character suited to the tastes of the owners had been going up within the fire limits. Probably as the result of this exposure of the condition of affairs, we are pleased to observe that the city council have appointed a Building Inspector in the person of Mr. Peter Balfour. Under his direction let us hope, a correct record will be kept of the number, character, location and cost of every structure hereafter erected in the city. It is also to be hoped that the construction of no building will be allowed to commence until the plans thereof shall have been approved and a permit granted by the Building Inspector.

IT is, we believe, not generally known that Canadian property owners in these closing years of the nineteenth century are still subject under certain circumstances to provisions of British laws whose enactment is said to date back to the reign of Queen Elizabeth. Such is however the fact, absurd though it may appear. Under one of these old statutes an action was recently brought in the Toronto Courts by the manager of an incorporated company to prevent a neighboring firm from increasing the height of their buildings, on the ground that their doing so would interfere with the side-light which the plaintiffs had enjoyed for a period upwards of twenty years. The plaintiffs claimed to be entitled under the statute in question, to a sky-line at an angle of 45 degrees from their lowest side-light sill. Notwithstanding that the building the height of which it was proposed to increase was separated from them by an open space 40 feet in width, and would in reality have no appreciable effect upon their side-light, they absolutely refused to accept any offers of remuneration for their alleged deprivation, and the defendants were obliged to alter their building in such a way as to comply with the requirements of the statute. Another case to which our attention has been directed is that of a firm who are prevented from building upon the rear portion of their property because the windows of buildings on land adjoining have overlooked and received light from this vacant space for a period of twenty years. An Act recently passed by the Ontario Legislature will for the future

override the provisions of the ancient enactment, but this Act not being retrospective, all persons in the enjoyment of a side-light for twenty years prior to the passing of the Ontario law can enforce by legal process their right to a continuance of the same.

THE Toronto Collegiate Institute Board have invited architects to submit competitive designs for their proposed new building. A glance at the circular issued by the Board to the architects is sufficient to show that nothing but regret and annoyance is likely to be the reward of any architect who may engage in this competition. About the only thing in the way of detailed information afforded by the circular is that "the Property Committee reserves to itself the power of selecting or refusing any or all designs submitted," and "the Board will, if they deem fit, award the sum of $100 to second best plan, and $50 to third." The Secretary of the O. A. A. pointed out to the Collegiate Board that if they hoped to enlist the services of the most skillful men in the profession, the conditions would have to be revised in many particulars. The correspondence which took place on the subject has been printed and forwarded to each member of the O. A. A. The chairman of the Collegiate Institute Board promised to have the terms of the competition amended as suggested, in order that they might prove acceptable to the architects, but this was not done, the chairman of the Property Committee to whom the matter was referred, being of the opinion that no changes were necessary, which opinion he supplemented by the impertinent remark that the Ontario Association of Architects apparently wanted the brains of the Board to guide them, whereas the Board desired to get the brain-power and skill of the Ontario Association of Architects. The circumstances would have justified him in adding that the object of the Board was to get the brain-power and skill without paying for it. In the competition, nothing like a detailed statement of the requirements has been given, no expert is to be appointed to judge the plans, and the Board reserves the right to reject all the designs sent in, or "should they see fit," they may award the magnificent amounts of $100 and $50 respectively! What a brilliant conception this of justice and the eternal fitness of things, to say nothing of liberality! We might ask the architects of Ontario these questions: "What think you of the estimate placed upon the value of the services you can render? How do you propose to show your appreciation of this estimate? As an architect in another column correctly puts it, it rests with you to say what kind of treatment shall be accorded you. If architects will individually and as a profession resent such unfair treatment, and show their *esprit de corps* by refusing to have anything whatever to do with such unsatisfactory affairs, the building competitions evil, which is steadily growing worse, will soon be remedied. There is another side to this question, and it is that the taxpayers of Toronto will be called upon to pay for the proposed Collegiate Institute building, and have a right to insist that the best design obtainable shall be secured. It is a foregone conclusion, however, that the most skillful architects will not enter the competition, and consequently the probabilities are all opposed to the idea that the design chosen will be the best which might have been had.

THROUGH the mediation of the President of the Toronto Board of Trade, conferences of the parties to the dispute in the building trades in the city have taken place, and have resulted in a settlement. The stonecutters, whose demand was for 45 cents per hour, or an increase of 7 cents per hour, have agreed to accept 43 cents for a period of three years from April 1st; the agreement with the bricklayers is for five years at 35 cents per hour for the first year and 36 cents for the subsequent four years; the laborers are to be paid 20 cents for one year, and 21 cents for four years following; and the stonemasons, 35 cents for two years and 36 cents for three years. A clause in the agreement provides that a conference between the parties thereto shall be held four months prior to its termination to consider all matters as to their future relations. While the entire community will doubtless find in this adjustment of the difficulty, a subject of congratulation, there will come corresponding regret that the strike was not by such a reasonable course of action, entirely prevented. Had that been done, many building projects would now be under way which under the circumstances have been temporarily if not permanently abandoned; each individual workman would have been from one to two hundred dollars better off than at present; and the business community would not have had to struggle with the difficulties imposed upon it by the withdrawal from circulation of a large amount of money, and the necessity of supplying on credit the necessaries of life to the strikers and their families, many of whom, no doubt, as is usual at the close of every winter, were in debt when the strike began. It is but another illustration of the hardship and loss which invariably result from recourse to strike methods.

The present is a fitting time to enquire what course should be adopted for the future in deciding the relationship as to rate of wages, hours of labor, etc., of the employee to his employer. The clause in the agreement just concluded in Toronto which provides that a conference shall be held four months before the agreement expires, is a step in the right direction, and seems to indicate that wiser counsels will hereafter prevail. This is the manner in which we hope to see what is known as the "labor problem" solved. There are other methods by which to solve it, but they are not in keeping with the progress which the world is making in other directions in this nineteenth century. One good suggestion made by one of our correspondents elsewhere is, for the employers to throw the responsibility of refusing to grant an increase of wages upon the proprietors of new buildings. If this were done, public opinion would very soon be brought to bear for the speedy settlement of all strikes. If the demands for increased wages continue to arise, the contractors will have no other course open to them than to charge the extra amount to the cost of the building. This would undoubtedly react seriously upon the welfare of the workmen, and indeed the entire community, by greatly reducing the volume of building operations. It is to be hoped that workmen will perceive that this question has more than one bearing upon their interests, and therefore requires to be looked at from different standpoints. Neither should it be forgotten that conditions in the building trades are subject to change, and the rate of wages which can be paid in an exceptionally prosperous season should not be expected or demanded under reversed conditions. Last year, for example, certain contractors in Toronto required to have so much stonecutting done in a specified time, that they offered to pay seven cents per hour above the union rate of wages. This exceptional circumstance, we are informed, led to the demand being made this year by the stonecutters for an advance to 45 cents per hour—their method of reasoning being that as some contractors paid this figure last year, they were able to pay it for all time to come. The fact that the present season promised to be much less active than last, seems never to have been considered. We point to these circumstances in the hope that such narrow views as too often have marked the past, will not be allowed to prevail in the future, but that recognition will be accorded the fact that the interests of capital and labor are identical.

THE Canadian correspondent of the *American Architect* embodied in one of his recent letters the following statements: "The architects of the Province of Quebec are talking about the formation of a Provincial Association and seeking legislation on the lines of the association of Ontario. A meeting for this purpose was said to be announced to be held in Montreal, but *nothing seems to have come of it*, and indeed what else could one expect, when for the last twenty years attempts have been made to draw the architects together but all have failed. The jealousies of Montreal's architects are positively ridiculous. Beginning with the natural dislike that usually exists between 'two of a trade,' this feeling is stimulated into an antipathy in the hearts of one race against the other, and the English speaking and the French are separated by a wide gulf. This natural racial dislike culminates in a general *hatred* of every individual in the profession, and so the formation of an association among such very unethical men is an *impossibility*. The Quebec association, however, very kindly wishes to embrace all the Montreal architects, but they have stayed proceedings until the Ontario architects' bill should have been passed or thrown out, in order to see what chances they were likely to have of success. Perhaps if the Montreal men get some kind friend to take them by the hand they may be induced to embrace each other." (The italics are ours.)

Most of the statements contained in the above extract are so entirely at variance with the situation at present existing in Quebec, that in justice to the architects of that province, more particularly those of the city of Montreal, we feel it to be a duty to enter our strong protest against them, as well as to expose their "positively ridiculous" misrepresentations. We can assure the profession in Ontario and elsewhere that hatred is not the prevailing sentiment among the architects of Montreal and the province of Quebec; that something *has* come of the efforts being made to form a Provincial association; that the formation of such an association is *not* an impossibility, but at the present moment has been brought to the verge of accomplishment, and this result has been attained by the hearty co-operation of English and French architects. It is doubtless true that jealousies have existed among members of the profession in Montreal, but we would ask the correspondent in question to point to a city where they are unknown. Certainly it cannot be said that Ontario is blameless in this respect. This being the case, why should the architects of Montreal be held up before the world as an example of "unethical men?" Nor does it follow that the existence of jealousies and the failure of past efforts to form an association are sufficient premises upon which to declare the ultimate success of such endeavors impossible. The success which has crowned the efforts of the architects of Ontario is the best possible proof of this. The formation of the Ontario Association of Architects was accomplished in the face of strong local jealousies, and after the failure of several past attempts to secure such a result. The architects of Quebec have no greater difficulties to surmount than those which their brethren in Ontario have overcome, and there is not the slightest room to doubt that equal success will attend their efforts. It is proverbially an unwise thing for people who live in glass houses to cast stones at their neighbors. In view of the results which have followed the formation of the O. A. A. in the direction of promoting good-fellowship among members of the profession, enabling them to work unitedly for the uplifting of the profession and the advancement of their collective and individual interests, the Canadian correspondent of our American contemporary might have made nobler use of his pen had he commended and sought to promote the movement on the part of the architects of Quebec for closer fraternity and the benefits arising therefrom, instead of seeking to widen the gulf which in his imagination at least, exists. We are in a position to know that the sentiments which he has expressed are not shared by the members of the profession in Ontario. On the contrary, anxiety prevails to see the organization of the architects of Quebec accomplished, and any assistance which the Ontario Association through its officers may be able to give, will be cheerfully accorded.

WHAT a specimen of the enlightenment of the present age is our Mechanics' Lien Law! "Unless he signs an agreement to the contrary, every mechanic, machinist, builder, miner, laborer, contractor or any other person doing work upon, or furnishing materials to be used in the construction, alteration or repairs of any building or erection * * * shall, by virtue of being so employed, or furnishing, have a lien for the price of the work, machinery or materials, upon the building * * * and the lands occupied thereby * * *," which being interpreted simply means that, if a contractor owes a workman that he has employed upon a particular building a portion of his wages, or if the contractor has not paid for material supplied to him for a particular building, the workman or the supplier of the material can claim the amount due to him from the owner of the building and enforce payment of his claim from him. Was there ever a more childish law? Was there ever a law which saddled upon an innocent person the responsibilities of liabilities assumed by a third party, that has not been repealed before this? Surely then, it is time this iniquitous and foolish piece of legislation were taken off the Statutes. How is it possible that such an Act has become law? Its intention is to provide a protection for the workingman against his employer in case his employer turns out to be an unscrupulous man who will defraud him of his wages. But is not this protection guaranteed him by the ordinary process of the law? Why should he need this special protection, and a protection which is a positive fraud upon an innocent person? The law robs Peter to pay Paul—Paul sometimes being a rascal who, because he thinks it is easier to get Peter (the proprietor) to pay him his wages than his "boss," goes and sets the machinery of the law in motion to screw out of Peter money owed him by another person. We might just as well have a bakers' lien law, and allow the baker who makes the bread to come down upon the man who eats it, because the master baker for whom it is made and who sells it has not paid his workman. In a case of this sort the baker's only remedy is to sue his master for his wages. Cannot the mechanic of the building trade do the same thing? Are contractors so notoriously evilly disposed, that the men they employ need special protection? And supposing they are, and that the mechanic must be protected, surely it would be only fair that he should have a lien upon the *contractor's* property—his horse, his cart, or his private goods and chattels. According to the lien law, the lien takes precedence of other claims upon the property or building. According to the law of sales for the recovery of mortgage on chattels, the landlord's claims for rent must first be settled and no doubt it would be easy to assign the right place for a lien holder's claim to come in, and probably directly after the landlord's would but be fair and just; but there should be no power in the hands of a lien holder to enforce a sale to recover his wages immediately he considers them due. A certain time should be allowed the contractor before a lien can be taken out, or put on. As the law stands, directly a man entertains a suspicion that possibly he may not be paid just as soon as he would like to be paid, he goes and claps on a lien, to the excessive annoyance and inconvenience of the owner of the building, who, believing everything is going on smoothly about his building and having no cause whatever to think about liens, suddenly finds this "sword of Damocles" suspended over his head. He has already paid the contractor the contract amounts for the material supplied and the labour expended, with the contractor's rightful profit tacked on, and to his bewilderment he finds himself suddenly called upon to pay over again the amount of wages and the costs of material which he has never ordered and knows nothing about, except that as he can see his house has been built. The proprietor's only safety against such a law is, that he shall demand that the contractor who is successful in obtaining the work, shall deposit with him a marked cheque or a bond from responsible men equal to a considerable portion of the cost of materials and labor supplied. The proprietor must protect himself as long as this law exists, and though we should be sorry to see worthy builders hampered, yet when there is such a stringent law for the protection of the employee against the employer, because some employers are not honest men, the good must suffer with the bad. Proprietors and contractors should work together to get this law repealed.

THE Act of Registration of the Ontario Association of Architects, was opposed by some members in the Ontario House on the ground that there was no necessity for it on account of the safety of the public either in respect to loss of life or money. On these grounds some clauses which would have protected the public were struck out and the Act very much emasculated. However, it was thought that an Act that gave a few unimportant privileges was better than no Act, and it was determined by the profession to put it into force. This conclusion was arrived at the more readily, as the committee who had the matter in hand had every reason to believe that before many weeks would pass they would be able to cite an example which would drive home to some at least the fact that it would be advisable, to say the least, that those who professed to be architects should

have some slight knowledge of construction. The few weeks have passed and the example can now be cited, and the lesson which it teaches driven home. What effect it may have we do not know, but of this we are assured that no one will now have the hardihood to claim that no serious loss can result through the lack of constructional knowledge on the part of an architect. It has now become an acknowledged fact that the new Board of Trade building in this city is to all intents and purposes a dangerous structure, and that it will in part have to be reconstructed. Some months ago three stories of an inside wall fell carrying with it two stories more which were below, the whole forming a mass of broken brick and girders in the basement. Fortunately the fall of the walls took place after the workmen had left the building or there would have been a serious loss of life. The accident as it was called (but accident it was not), resulted through overloading the brickwork carrying one end of a double girder. The brickwork was rather inferior, the pad stone was very small, and consequently when a load four or five times what it should have been, was applied, the jamb gave way and let the girders down with the load of brickwork. This portion of wall was not the only one overloaded, a pier 2'3" x 1'10" would have had, if it had not given out, a load of between 80 and 90 tons without the weight of such portion of the roof as would have come upon it. Over 20 tons per square foot was imposed upon brickwork that should not have been loaded over four tons. The furnace chimney, with two large openings in the basement, was built of 9" brickwork from the ground floor to the coping stone, a height of something over 100 feet. The architect not deeming this a sufficiently wonderful feat, actually imposed upon this poor overburdened chimney the additional task of carrying heavy outside walls and a brick vault or square room, and many square feet of floor surface. With this load one would think that only the very best hard brick would be used, but such was not the case, as many soft or medium brick found their way into the work. That cracks resulted and portions of the work fell down is not surprising; it would have been very much more surprising if the cracks had not appeared nor the walls fallen. The building in nearly every part shows a lack of constructional knowledge on the part of the designer that is astonishing. Solids are over voids and voids over solids to an extent that leaves but few portions of the building directly supported in the foundations. Iron columns with heavy loads are placed upon brick walls with small pad stone, and iron girders are placed anywhere and everywhere and loaded without any regard to results. Not one calculation could have been made by the architect during the preparation of the drawings or during the erection of the building, or he would have discovered that he was attempting to do impossible feats in construction. But if the construction of the building was bad in the first instance, the attempts to remedy the mistakes and to make the building safe were simply ludicrous, and did very much more harm than good. What it will cost to make the building a reasonably safe one we do not know, nor are we able to make an approximate estimate of the depreciation in value as the result of the inferior construction. The loss sustained by the Board of Trade may be stated in the following manner: Cost of alterations and improvements necessitated by bad construction, plus depreciation in the value of the building, minus whatever little saving there may have been in erecting the building as it was erected. The loss is a serious one, but the amount of it does not concern us. All that we have to do with is the fact that a building was erected which is now held by those who have knowledge of its defects as being most faulty in its construction, some parts in fact being so faulty that the factor of safety is nothing. It cannot be urged in this case that the same result will not occur again, or that they were exceptional circumstances which brought about this state of affairs. The erection of the building was entrusted to a committee chosen from the council of the Board of Trade. Now the Board of Trade is composed of the most capable business men in the city who should be able to celect a council from among their most capable men. The council one would think would place upon the building committee from among the Board of Trade members those most capable of fulfilling the duties. Notwithstanding that we believe that such was the case, the result is as bad as it well could be. The committee with all its ability was not able to prevent an incompetent architect from erecting a most faulty building. When such a committee was not able to prevent so ruinous a result, what can reasonably be expected of a committee composed of men of very much inferior abilities and much less experience in such matters, if they should have to do with an incompetent architect? Every circumstance connected with this building has been favorable to a successful conclusion. The competition was one conducted on the most advanced principles—the expert chosen had a wide reputation in the United States for his ability as an expert; the men who were entrusted with the erection of the building were the equals of the most successful business men in the community, and yet when the architects were incompetent the result is disastrous. If matters had been reversed and the architects had been competent and the building committee composed of incompetent men, the building would almost to a certainty have been successful. All of which shows most clearly that it is necessary that there should be some means taken to ensure the competency of every man who professes to be an architect. If the accident which took place at the Board of Trade building had occurred during working hours and several lives had been lost, we should have had the matter most thoroughly investigated. But fortunately as no lives were lost, and although the responsibility is not reduced thereby, no effort has been made to place the responsibility on the proper shoulders, but instead, every effort has been made to keep the matter quiet. No better example could be given of the necessity of an Act to regulate the practice of architecture than the fact that the Board of Trade building, the erection of which was entrusted to business men the equal of any in this city, was constructed without any regard to the well known and accepted laws of stability, as the result of the employment of an incompetent architect.

OUR ILLUSTRATIONS.

THROUGH an oversight, credit was not given to Messrs. Castle & Son, Montreal, the designers of the beautiful memorial window in connection with St. Andrew's Church, Kingston, which was the subject of an illustration in the CANADIAN ARCHITECT AND BUILDER for May. The subject, "St. Andrew Introducing Certain Greeks to Christ," is an original composition, displaying careful study. The colors are a rich ruby, harmonized by greens and blues, with sacred emblems distributed throughout.

THIRD PREMIATED DESIGN FOR CONFEDERATION LIFE ASSOCIATION BUILDINGS, TORONTO—JAMES BALFOUR, ARCHITECT, HAMILTON, ONT.

DESIGN FOR RESIDENCE—J. W. & E. C. HOPKINS, ARCHITECTS, MONTREAL.

CHRIST CHURCH AT MIMICO—GIBSON & SIMPSON, ARCHITECTS, TORONTO.

"CANADIAN ARCHITECT AND BUILDER" COMPETITION FOR FRONT FENCES—DESIGN BY "BROWNIE" (THOS. R. JOHNSTON, TORONTO), AWARDED FIRST POSITION.

TORONTO ARCHITECTURAL SKETCH CLUB.

A HAPPY combination of pleasure and profit formed the programme for the regular meeting on Tuesday, May 27th. An invitation had been received from Mr. Barlow Cumberland to spend the evening at his residence on Wellington street west, where the grand architectural library collected by the late Mr. F. W. Cumberland was to be seen.

Before the departure of the guests light refreshments were served, and the health of the host was drunk. A pleasing diversion was a competition in drawing, corkscrews being the only instruments allowed, and in which some of those present showed a remarkable proficiency.

Possibly wearied with the hard winter's work, the Club relaxed at its closing meeting, Tuesday, June 10th, and devoted the time to lighter pursuits. A capital programme was given by local talent, songs being rendered by Messrs. Herbert Matthews, J. A. Radford, J. J. Woolnough, H. W. Allardyce and J. H. Fawell, the latter doing good service as accompanyist on the guitar. The ever popular ventriloquial sketches were given by Mr. Harry Simpson, while Mr. J. B. William's humorous readings completed the programme.

Owing to lack of response the competitions announced for last month have been postponed, and will be put on the programme for the first meetings in the fall.

During the summer members will have the following outings, when sketching, building inspection and photography will be indulged in, according to the taste of those present:—The start will be from club rooms at 2 p.m. sharp, Saturday, June 28th, July 12th, July 26th, Aug. 9th, Aug. 23rd.

COMMITTEE'S REPORT ON TORONTO ARCHITECTURAL GUILD COMPETITION.

THE Guild offered a prize for the best design for a country church in the style of the Late Decorated Period, and another for an essay on any period of the history of architecture, as a stimulus to students to take up architectural styles as a study. The result has not been satisfactory, and goes to show how little interest apparently students in general take in this important side of their profession. It was not intended that the prize to be offered should strike the mercenary chord in a student's breast, and therefore it was not large, but it was expected that the students would respond to the offer of the Guild and receive the encouragement held out to them. Essay writing is not an easy matter, but no one has made an attempt. Of the designs sent in (only two sets), that of "Tyro" is placed first. The author, who submits four sheets, plan, elevations and sections and one sheet of details, deserves great credit for the study he has given to the subject, and his endeavors to reproduce the principles of the style. There are points about his details which are worthy of special notice. The window tracery is good, placed flush with the walls. The cusping is correctly drawn. As a piece of design, apart from the rest of the building, the west front is very creditable, although his treatment of the upper part of the gable to counteract the drawn up effect of his lofty gable, is somewhat commonplace. The circles are not good, although the intention is well meant. A clerical error is the position of the string course below the projection of the buttress weatherings; it should either form the projection of the weathering itself, or else the projection of the weathering should be omitted when in this connection.

The belfry has a somewhat heavy base, but it is picturesque. The main fault about the exterior is that its proportions are those of an earlier style. The pitch of the roof is far too high, and the wall plates might have been lowered some 6 or 7 feet with effect. Constructionally the roof is not strong, and it is entirely outside the style. The doorway of the main porch is the worst feature of the design—instead of being English at all, it is what the ordinary Philistine would call "Modern"; it is feeble, and its label mould is out of all proportion. But credit is decidedly due to the design of the rose window in the east gable.

Now as to the plan: the general proportions are very good. A fair sized vestry is a very necessary adjunct to a country church where there is no other room provided for small meetings and so forth. The font is in a correct position near the door, although the minister's step should have been placed where he would face the altar. Some accommodation is lost by the position of the pulpit which, though usually on the left side, might here have judiciously been placed upon the right. A door from the church yard to the organ chamber is quite unnecessary, and not good for the organ. No arrangement seems to have been made for the heating, a matter of the highest importance in this climate, and one which requires careful study. A chimney in a church is a good test of ability in design, and to attend a church without heating apparatus is mortifying to the flesh with a vengeance.

"Notus" has gone in more for outward effect than for either correctness of style or good planning. He has altogether failed to grasp the idea, and submits a design in a poor American modern style. He has produced a picturesque effect, which apart from this competition does him credit, but this was not the requirement. He has made no study of detail, but has incorporated such work as a village carpenter is usually capable of executing. We would advise him to study good ancient examples rather than the pictures of the *American Architect*.

In plan the church is a failure, quite unsuited to the English church service. There is no chancel except that a portion of the nave is raised as a platform; the sanctuary is a separate edifice, but even here "Notus" has failed. His narrow steps at the Communion Table would be the first detail that would displease the parson. The school room, though not asked for, is well placed, but for the entrance to the church the author has gone to greater expenditure than a village congregation is at all likely to afford, and one which is altogether out of proportion to the effect secured.

"Notus" has provided a large basement, for heating purposes we presume, but with a flue in one of the buttresses and another in the vestry fire-place. We fail to see the utility of the large flue at the back of the vestment closet. It cannot be intended as the bottom of the vestry flue as it is altogether out of place. The roof is heavily timbered and the proportions of the various timbers are carelessly indicated. The form is more suitable for the school house than for the church. Its construction is hidden by a ceiling and is out of style.

"Notus" should study the requirements of his parsons and their congregations before effect.

FRANK DARLING.
R. W. GAMBIER-BOUSFIELD.
S. H. TOWNSEND.

THE SUN LIFE ASSURANCE CO. BUILDING COMPETITION.

TORONTO, May 27, 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—In your issue for this month you have given an illustration of the second premiated design for the Sun Life Assurance buildings in Montreal, sent in in a competition which was settled some months ago, and you have thus afforded those interested in the matter not residing in Montreal, an opportunity of seeing a design that according to the man who examined them was worthy of second place, but which according to the conditions of the competition ought not to have had a place at all. I am not saying that it is a bad plan, or finding fault with the design at all—that is not my purpose here—but what I wish to draw your attention to is the utter disregard of the "conditions" by the so-called "expert" who pronounced upon the designs, thereby inflicting a great injustice upon other competitors and showing how unfair was the decision. After the "conditions" were issued, it was discovered that the person who had calculated the areas of the rooms required, had exceeded the limit of the site, and a circular was sent round to the competitors advising them of this, although no doubt many had discovered the error for themselves, and, like myself, had written to the authorities to ask what they desired to have altered, so as to bring the requirements into the area of the four walls. The answer received was sufficiently satisfactory, but it did not allow of any additional space being taken up on other floors. It simply reduced some of the areas given, and left it for the competitors to arrange as they best could. Now a binding clause was that the "Board room," "two agents' rooms," "lunch room" and two additional rooms and lavatory, etc., should be on the second floor, but should occupy only a part of it, and that the *rear part* should be entirely separated from the front part of this floor by a solid wall, and having communication only with the floor below, upon which were the main offices of the company.

This particular condition was the one that caused most men the principal difficulty in arranging the plan, and had we all done as the author of the second premiated design has done and ignored this condition altogether, the planning would have been far easier. But because he has either overlooked this condition or been unable to make a place in conformity with it, Mr. Knox (whom I understand was the "expert"), thinks he is entitled to the prize. Surely this is very scandalous. You will readily understand that it must be far easier to get a certain number of rooms of given sizes, which sizes together are in excess of the given area of the site, into two floors than into one and a half floors, which was a stipulation. If you have got two boxes, and

you are desired to fill up half of one of them with sawdust, and then you are told to fill the other box with eggs and to put into the unoccupied half of the first box more eggs than you can get in without breaking them, what would you do? The first thing that would occur to you no doubt would be to violate the condition and take out the saw dust and take the whole box for your eggs, and this is what the second prize man has done, but others who thought it out came to the conclusion that it would be wiser to get eggs of a slightly smaller diameter, and so succeeded in getting in the correct number without violating the conditions or materially changing the requirements. But our friend Knox thinks the man who takes out the sawdust has done the cleverest thing. The sawdust in this case represents office space from which the company were desirous of obtaining a rental.

It is to be doubted whether good planning was or was not one of the points on which Mr. Knox based his opinion, and it may be said that such things as w. c.'s and ladies cloak rooms are not of such importance as other requirements, but still I venture to suggest that such unmentionable places require some consideration. I may be allowed to direct the attention of Mr. Knox to the fact that in the design in question the w. c.'s for the use of the lady clerks of the company open directly out of the general office for the male clerks, and directly at the foot of the stairs leading up to the male clerks' lavatories, board room, directors' room, lunch room, store room, and so on. It would be well for architects who know that ladies like a little privacy, to see that their plans will be examined in future by some one who knows this much at any rate. As I have said it is not my intention here to criticize the general arrangement of the plan, I will not take up any more of your space.

Yours very truly,

"A KICKER."

TORONTO COLLEGIATE INSTITUTE BUILDING COMPETITION.

TORONTO, June 11th, 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

SIR:—Though not a funny man, I have been more amused than perhaps most of the architects who have read the printed correspondence received by us yesterday, re Collegiate Institute competition, because I can say "I told you so!"

Our young and "impertinent" Association has received such a rebuff as, I trust, may never be mine as an individual to experience, though as individuals, each member of the O. A. A. is no doubt suffering under the indignity, and reaching around to kick somebody. Now let us kick the right party.

If in a brawl I get a knock down, I am likely to feel hurt, but might I not have remained elsewhere? If we don't like this treatment, the remedy is in our own hands. Let us discourage the practice of architectural competitions altogether. For some years I have done my little part in that direction, and shall so continue. Some say, "they have done good," and that it "gives the young men a chance"; others, that "contractors have to compete, why not architects?" I cannot see the parallel. Do we invite carpenters to set up the framework of a row of cottages that we may select the strongest and employ its framer to complete one? Does a speculator, wishing to cut a farm up into building lots, invite surveyors to take measurements and notes, showing the greatest frontage each can make of it, that one may be employed to make a plan of it? Or in litigation, do we invite lawyers to send in briefs that we may select the most likely and employ its compiler to conduct our case? the rejected ones in each competition not even getting "thank you." Only in this light can I regard the too common advertisements addressed to architects. Are we so simple as to obey such bidding? Then do we deserve the treatment we receive. Our employment demands the most painstaking attention and the strictest integrity. Why, then, are we treated with suspicion and contempt? Our capabilities, preparation, experience and responsibilities must equal those required in any profession, then why not assume the dignity and command the respect? What other class of men would have begged of a school board the privilege of giving a month's labor gratis, or would have been treated to such gratuitous insult?

I am far from being wealthy, nor am I overburdened with commissions, especially this season, but, sir, what little business I am entrusted with I propose to do on business principles; my fees understood and payment assured—then my clients' interests receive my best attention, and I have preserved my self respect.

I may scarcely hope to have a seconder, but beg to record my humble conviction that the more creditable and profitable course for the O. A. A. would be to declare collectively and individually against any and all architects' competitions in this or any country. It is good practice for students, but should be dropped on entering business life.

Let an architect be engaged on the strength of his known or supposed ability and integrity; let him work up a practice and reputation as other professional men do, and when competitive designs cease to go a begging, he will be sought after and respected. Let a school board, as would an individual, employ whom they choose, and when he is not wasting his time and talents over competitions, he will be able to design quite as creditably and more satisfactorily to his clients, when enjoying their confidence, than as a stranger and without prospect of remuneration. An incompetent man may sometimes be selected, but can matters be any worse than at present? Competitions are always unsatisfactory to the greater number interested, and because unbusinesslike in principle, always will be. In the hope that this latest example may be an eye opener, I remain,

Yours truly,

M. B. AYLSWORTH.

THE LESSON OF THE RECENT STRIKE.

TORONTO, June 9th, 1890.

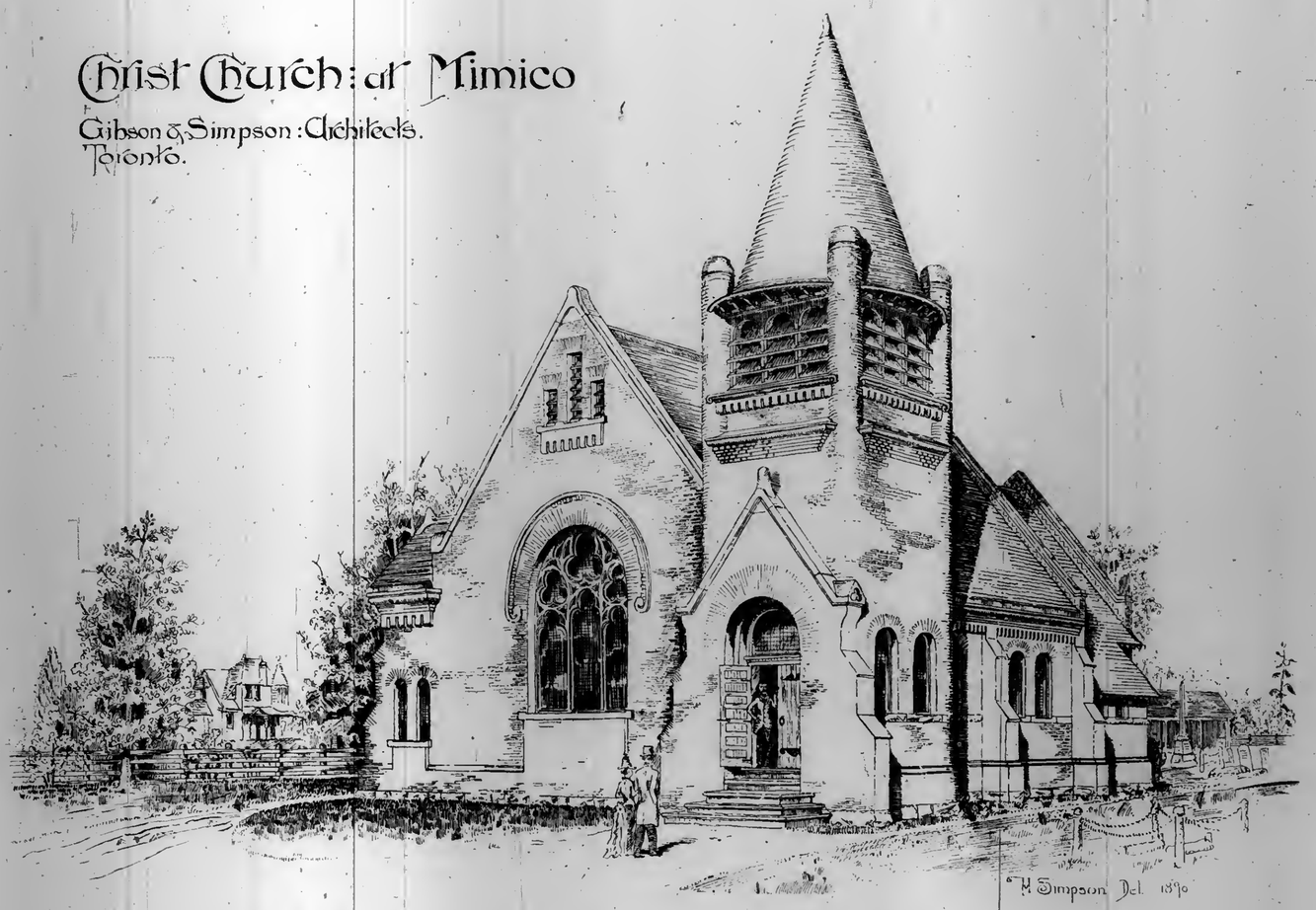
Editor CANADIAN ARCHITECT AND BUILDER.

SO our workingmen have at last seen fit to bring the recent labor dispute to an end, by accepting a compromise with the master builders. The men have had it almost their own way, but their long idleness has shown them the folly of their ways, and the terms of the agreement that settles the wages of the next five years, shows only too plainly that they do not care about another strike just yet. But why did our master builders come to an agreement like this at all? Was it for the sake of peace, or was it that they could not hold out longer? Here is a case in which our men were getting fair wages; there was no prospect of a kind that could in any way justify a demand for increased wages, yet they determine by joint action to enforce such a demand. They will not listen to reason, but with the childish freak that has become their custom when they cannot get what they want, they refuse to work.

But we raised the question why did the master builders give in? and we will ask another question: What have the master builders got to do with the matter at all? Certainly the men are employed by the masters, but in a different way from that sense in which a private individual employs a domestic servant. Here the master of the house says what wages he will pay, and if the servant does not like them, she goes somewhere else. But the workmen have banded together, and the question is not as between master and servant but as between (as they are so fond of saying) capital and labor. It is *not* then a dispute between master builders and workmen, but between workmen and the *proprietors*. By the enforcement of higher and stated rates of wages it is not the contractor who is affected (except so far as existing contracts are concerned)—it is the public—the public who pay the workmen through the contractor, the agent of the public. In the dispute between "labor and capital," the proprietors—the public—who represent the capital—keep out of the way; they leave the builder to fight it out, and when he can no longer hold out because they are themselves pressing him, he gives in—the result of being between two fires—and the public are content, and see not that it is they who are beaten. Of course the masters give in; were we a master builder, we would not hold out an hour against a demand for increased wages by these cowardly unions. Why should we be made to bear the brunt of opposing them when it's no concern of ours? No, if the public will not back up the masters against exorbitant demands, let the masters give in and let the public pay whatever

Christ Church: at Mimico

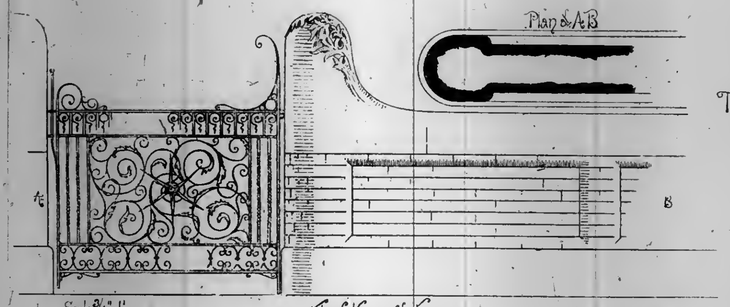
Gibson & Simpson: Architects.
Toronto.



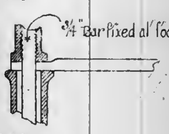
C. C. & B. Competition. No. 7.

Three Designs for Front Fence

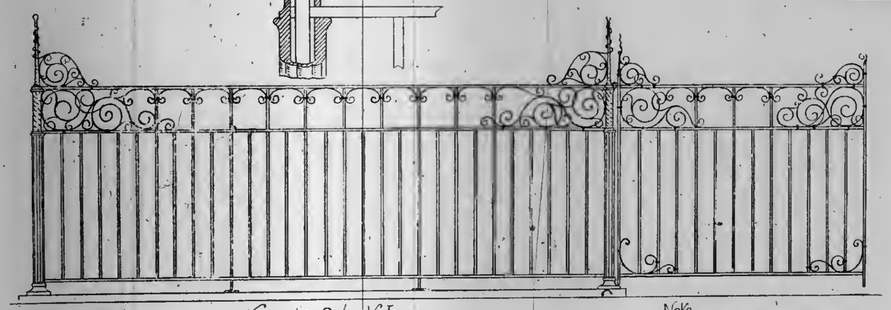
By "BROWNIE"



Elevation of Fence.
w. Stone & Brick

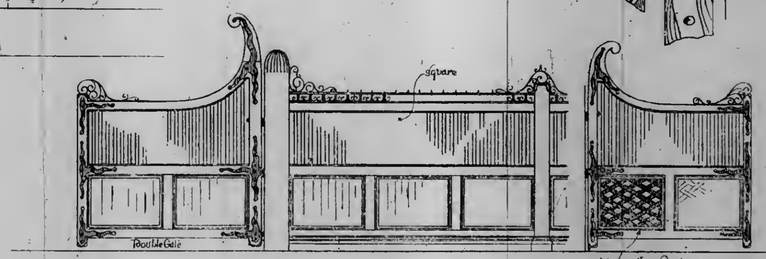


Section through Post

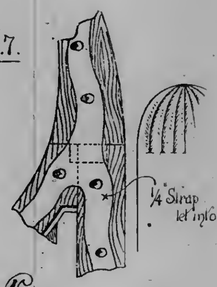


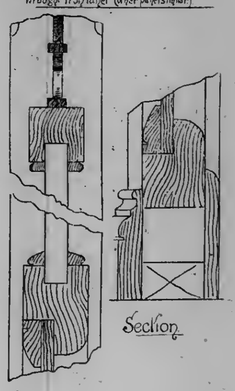
Scale 3/4" = 1' Fence w. Wrot. Iron.

Note Double gates similar to single.



Scale 1/2" = 1' Fence w. Wood With wrought iron Fillings





Section

they are asked if they do not see fit to make a stand against it. While the workingmen remain in their present condition (the obedient slaves of the unions), it becomes cowardly for a proprietor to insist that a builder should complete his contract. Our poor workingman, led like a tame bull with a ring in his nose by a scheming adventurer who is gradually sucking his blood and becoming wealthy in the process, refuses, at his order, to do a stroke of work until he is promised higher pay. Very well, that is the position, if we will look at it correctly. The master builder does wrong when he says "All right, do what you like, I will not pay you a cent more!" He should turn to his employer and say, "will you pay the increased demand?" and if the terms of his contract do not admit of his asking the question, he should see that in future they do. If the proprietors collectively say "No!" the work stops—stops till the unions are forced to give in, stops till their power is gone. Then let the workingman be raised out of his slavery, and, when fit as a man, let him be treated as man.

Respectfully yours,

FAIR PLAY.

BUILDING CONTRACTS.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—The following is, I believe, contained in nearly all the contracts between contractors and owners that I have seen, and the blank contract from which I have taken same has a statement at the top thereof that the contract is approved by the architects and builders of Toronto, namely: "The proprietor shall pay the contractor in manner following:—eighty per cent. to be paid by the proprietor on account of the contract, and all additional works, as the work shall proceed, on the value of the same, which value shall be in proportion to the amount to be paid for the whole of the works and additional works, the balance of the contract and all extras to be paid within thirty days from the completion of the said works, and after the contractor shall have rendered to the architect a statement of balance due to him. *And it is further understood that in case of several contractors being employed on the works, no trade is to be considered complete till the other several contracts are also completed.*". The italics are mine.

It has always been to me a matter of surprise that contractors would consent to a clause in the contract such as above quoted.

It seems to me that it might be a matter of great hardship to contractors for the stonework, excavating and brickwork, and even many of the other contractors that they should have to remain out of twenty per cent. of what was due them until after the last work had been done upon the building, which in the case of large buildings might mean years.

I am not, sir, writing for the purpose of having any dispute with any person, but should be pleased to see a controversy on this question, so that if it be a fair clause to have in the contract all may understand why.

I have the honor to be, etc.,

FRANK DENTON.

TORONTO, June 6th, 1890.

ROT IN TIMBER.

ONE of the questions of the day in the building world is, "How to preserve timber incorporated in buildings from decay." There are many systems as there are many causes, and as the cause varies in every instance, so often this or that system of cure is at fault, when applied to a particular case.

Decay in timber usually occurs from exposure to alternate wet and dry atmospheres, but the rot which causes us so much trouble is produced where the atmosphere does not change much. This rot is of two kinds, generally known as "wet rot" and "dry rot." Wet rot shows itself where, in the case of wood being imperfectly seasoned, gases form in the wood, but owing to ventilation they are able to escape. Dry rot, on the contrary, is the result of the same gases, which being unable to escape owing to want of ventilation, remain on the surface of the wood and form a fungus very difficult to get rid of, and very contagious in its nature.

Wet rot will occur in a growing tree, but if the wood be thoroughly well seasoned the rot may be prevented from appearing in the converted wood when built into a building by painting or carefully sheltering it. The disease of wet rot is not spread except by actual contract, whereas dry rot spreads by dissemination of the germ of the fungus.

Air confined and without much moisture encourages the growth of the fungus, which eats into the wood. Warm, damp and stagnant air are sure to produce dry rot, while the simple want of sufficient ventilation will be cause of rot in one form or another.

Dry rot usually appears in the flooring beneath which there is either no ventilation, or where, with little ventilation existing below, fires are kept burning above, as by this means moisture is drawn up from the soil.

Ends of timbers built into walls are nearly sure to be affected by dry rot, unless they are protected by iron shoes, or lead or zinc. The same result is produced when joinery or other woodwork is secured to walls before they are dry.

Shavings left under floor boards are a sure cause of dry rot, and painting or tarring unseasoned wood is an injurious custom as it only shuts in the gases and dry rot is the result.

When once dry rot gets a firm hold in a building it is very hard to remove it entirely. Like fever germs, so the germs of the rot are carried about and fasten on walls or other timbers where they germinate to the destruction of the material.

Of the ordinary remedies, the first is a sweeping one, but often, and in fact more often than not, the only actual cure: Substitute new timbers, brickwork or other material, for the affected parts, and carefully clean away every particle of the fungus; afterwards apply a wash as mentioned below.

Coal tar, or a weak solution of vitriolic acid with water is most effective, and pyroligneous acid is also very good. Sometimes a solution of corrosive sublimate, an ounce to a gallon of hot water, or a solution of sulphate of copper, half a pound to a gallon of hot water, will prevent the spread. But where rot occurs from want of ventilation, nothing short of supplying air will be effective.

So much for cure, now a few words on prevention. In a paper on "The Preservation of Timber" read at the annual meeting of the American Association for the Advancement of Science held a few months ago in Toronto, four methods were mentioned as having proved successful: (a) "Kyanizing" (so called from the name "Kyan" of the inventor), or preserving wood with corrosive sublimate (bichloride of mercury); (b) "Copperizing."—Margary's process—soaking the timber in sulphate of copper; (c) "Burnettizing" (Sir W. Burnet) steeping in chloride of zinc; (d) "Creosoting" with dead coal tar—this is known as "Bethel's" process.

The first two methods are gradually falling into disuse, and of the latter, creosoting is the most effective. But it was stated that cross grained woods, such as white oak and chesnut, should not be treated at all. The more porous woods, such as hemlock, bastard-pine and beech, take the treatment well, and as a result last twice as long as when without it.

Creosoting is effected by extracting the moisture and air from the tubes of the timber, and then forcing in kreasote (oil of tar), commonly called "creosote," at a high pressure. The timber after being dried is placed in a closed wrought iron cylinder. The air is extracted from the cylinder and from the timber within it by means of a pump. Creosote at a temperature of 120° is forced into the cylinder and penetrates the wood under a pressure of 170 lbs. to the square inch. Creosote must be thick, rich in naphthaline and free from ammonia. The amount of creosote pumped in depends upon the nature of the wood and the purpose for which it is intended. Sapwood absorbs more than the heartwood. Fir and other softwood will take from 10 lbs. to 12 lbs. per cubic foot, while oak and other hardwoods will take little more than from 3 lbs. to 4 lbs. per cubic foot. For softwoods a form of this process may be applied by simply heating or drying the timber over fires, and placing it while warm in hot creosote; but the timber must under all circumstances be seasoned first.

The effect of creosote is that it coagulates the albumen of the wood, fills up the pores with an oily liquid, destroys insects and fungi and repels worms, excludes moisture and prevents dry rot.

A principal cause of dry rot is constantly employed by builders—so common is it that one might almost think they consider dry rot an advantage to a building rather than otherwise. A carpenter finishes up the boarding of a roof and leaves it exposed to all weather until the roofer is ready to go on with his work. Rain falls, and the boards are soaked and water runs and drips inside; then before the boards have had time to dry, the roofer comes and lays on his roofing felt, and on the top of this puts his slates. We have often seen the woodwork of roofs under a foot of snow, and the roofer sweeping off the snow to lay his felt, utterly regardless of the result. Once this is done there is no ventilation, and dry rot will be the result. First to save the expense of covering the woodwork with a tarpauline the proprietor runs the risk of having to reconstruct his roof at no very future date.

As to the danger of dry rot, a few examples will show how carefully timber should be examined. A building begun and carried up to the second storey floor beams, was left unfinished and exposed to all weather for four years. The floor beams were of 18" x 14" sawn, reversed and bolted, each trussed with a piece of oak 4" x 3"; the ends rested on stone templates and were built into the wall in *mortar*. There was very little to indicate decay externally, but the centre of each was proved to be quite rotten, sometimes for a length of 4 ft. or 5 ft., sometimes the whole beam, and the oak in all cases was more decayed than the deal. The fungus appeared on the surface like a fine cobweb, the ramifications branching out in all directions of a cream white and dark brown color. The fungus had spread through the brick walls so that much brickwork had to be removed. The only effectual cure was the removal of all the affected material.

Dry rot appeared in a beam that gave support to a brick wall over an

opening in the basement of a house. The reason was, probably, because his corner of the basement was badly ventilated, and in addition to this it was near the kitchen fire above, so that moisture was drawn in and rested on the beam. Various methods of removing the fungus were tried but it always made its appearance again, so that ultimately the beam was taken out and replaced with an iron girder.

Dry rot is sometimes only to be detected by its sickly smell, and in one case in particular where to all appearances the wood was sound, but where the smell had been noticed, it was found that the joinery was quite rotten beneath a skin of paint that covered it, and the floorboards had rotted from below, up to within ⅛ of an inch of the upper surface. Want of ventilation of the space under the floor was the cause.

QUEBEC.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

THE ladies of the "Hotel Dieu" having decided upon the erection of new hospital buildings, some time ago commissioned Mr. E. Tanguay, architect, to visit Paris to examine several of the most important hospitals in that city with a view of applying the experience thus obtained in the construction of their new buildings here. Mr. Tanguay subsequently prepared plans and the work has now been contracted for and the buildings commenced. The entire cost will be in the neighborhood of $115,000, accommodation being provided for about 120 beds. It is expected that these buildings will form the basis for a model hospital, every pains being taken to have them erected in accordance with the most advanced ideas of what a perfect hospital should be. Mr. Thos. Pampalon is the contractor for masonry works and Mr. E. St. Pierre for carpentry works.

Mr. Tanguay is also charged with the improvements now being made to the venerable Basilica. Some exterior work is to be done, but the improvements mainly consist of interior decoration, including several stained glass windows. A steam heating apparatus is also being constructed by Messrs. Picard & Son. The cost of the whole will be about $20,000.

The interior of St. Alban's church is also being completed from Mr. Tanguay's designs, at a cost of about $15,000.

The parish church of Beauport, which was destroyed by fire about three months ago, is now being rebuilt. It was one of the very few examples of pointed architecture to be seen among the Roman Catholic churches of this part of the Province of Quebec. In addition to the original church a narthex is to be built to the west front with tower and spire at either end, the whole to be constructed of the local limestone with Deschambault stone trimmings. Mr. F. X. Berlinguet is the architect employed on the work. Your correspondent has not heard the estimated amount of expenditure, but assumes cost will be upwards of $75,000.

The new hotel project still hangs fire. Plans were submitted at a recent meeting by Messrs. H. Staveley, Quebec, and G. F. Stalker, Ottawa, who had jointly prepared the same. Plans were also submitted by Messrs. Roteh & Tilden, of Boston. As yet no decision has been arrived at. Both sets of plans were publicly exhibited at the Exchange; large numbers of our citizens examined them, each plan having its admirers. Further comment would be out of place at the present stage.

MONTREAL.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

NO contracts of any importance have been let since my last writing, except perhaps the Sun Life, the stonework of which has been awarded to Peter Lyall and woodwork to Robert Beckham. The plans for the Victoria Hospital, as I mentioned last month, have been remodelled and the two lowest tenderers in each trade asked to compete again.

ALLEGED BOODLE CONTRACTORS.

There is quite a degree of excitement among politicians over what are called the "Whelan-Pacaud" boodle transactions arising over the contracts for the Quebec Court House. The building was originally contracted for something under two hundred thousand dollars, and has already cost the province, I hear, close upon a million dollars. Mr. Whelan, one of the contractors, acknowledges having paid large sums of money to certain gentlemen in order to get his estimates passed through Parliament, and in fact has openly stated so through the press, the result being that a royal commission composed of two lawyers, one from Quebec and one from Montreal, has been appointed to examine into "one particular charge." One meeting has been already held, and the commissioners are shortly to proceed with the evidence of Mr. Whelan. It is doubtful if any satisfactory information will arise out of the enquiry, as one of the witnesses is reported as having stated that he will risk being put in jail rather than give the names of the parties to whom he paid money. It seems too bad that we can not get things done in an honest and honorable way in any contracts where politicians are interested. All contractors generally complain of having been bled. I cannot for my part see where the money charged to the construction of the Quebec Court House can possibly have gone unless there was a leak somewhere. I am sure if done in a private office it would not have cost one half the amount stated. It won'd be very interesting to have a bill of quantities of the material used in the construction of this building, together with the current prices for similar work and those actually paid the contractors.

HARBOR IMPROVEMENT.

Two of the Government engineers appointed to examine the report on plan No. 6, have visited the city during the month and made an examination of the plans prepared by Mr. Kennedy and Mr. St. George, and an interim report is shortly expected. The harbor commissioners, however, are not as anxious now to hurry the report, as the season is so far advanced that nothing can be done this year.

STRIKES.

Work has been so scarce during the last few weeks that we have heard nothing further regarding the threatened strike of the carpenters and painters, and judging from present prospects it is not likely we will have any serious labor troubles this year.

NOTES.

Some residents of Cote St. Antoine are endeavoring to agitate the question of annexation to the city of Montreal, but the matter has not taken definite shape yet.

The laying of the corner stone of the new Y. M. C. A. building on Dominion Square took place on Tuesday, the 10th inst., with the usual ceremonies.

The Grand Trunk has commenced the construction of the Wellington street subway under their contract which is being constructed at the joint expense of the city and railway for the convenience of vehicles and foot passengers. This is the initiative of getting rid of the deadly level crossings, and we hope in the near future to see them all abolished.

The Canadian Society of Civil Engineers have closed their fortnightly meetings for the season, the last one being held in McGill College. The Society's office is now transferred to their new rooms on the corner of St. Catherine and Mansfield streets, where the library and reading room will be kept open during the summer.

DECORATION AND FURNITURE

TASTE.

By W. H. ELLIOTT.

WHAT a bewildering vista of possibility is opened to the designer and colorist by the revolutions of modern machinery! The wonder is not that we see so much that is vulgar, but that the artist does not more often err with such a plethora of materials. This very condition has given birth to what may be called a false or sham taste, which eschews everything with positive qualities and exalts the negative attributes of namby-pambyism in whatsoever line it may appear. There is so much bad taste displayed on every hand under the paraded title of particularly good taste, one feels compelled at times to give utterance to protests which continually arise in the mind at the incorrect conception which may be said almost to prevail on this question. Men flatter themselves that they are building a house in the best taste, when its chief merit lies in the fact that like a barn, it has no points that challenge criticism. We see plenty of such houses around us. Women hunt for days to match a color in dressing, because it is such good taste to be dressed all in one color. The slight difference in shade or tint which they endeavor so assiduously to overcome may have been the only relief to the otherwise monotonous costume. People decorate their houses with the fear continually before their eyes that they may get some red or blue or yellow in their rooms and destroy their tasteful appearance. I wish to make a few observations on this last.

No doubt white walls are greatly to be preferred to ill-judged and ill-proportioned schemes of design or color. But to exalt the purely negative qualities of insipid greys, buffs, sages, and so on, above the richer tones which these merely shadow, is very much like singing the praises of well-watered wine. We are told sometimes with learned affectation, that you must use these washed-out tints in order to gain that very desirable repose in the treatment of walls and ceilings. What is repose? We speak of the erstwhile loud and angry sea sinking to repose. Do we speak of the repose of the shallow fluid never roused to action of any kind? There is a fascination in looking upon a lordly lion stretched in sleep in inaction, and for what reason? Simply that we see perfect strength and symmetry in repose, on which the eye rests with pleasure. Where is there a more restful sight than a glowing flower garden or a conservatory of rich exotics? Is there anything vulgar in it, or is it a display of bad taste? How soon may we expect this era of false aestheticism to pass away?

But, says one, where will you always get the controlling hand which shall ensure good taste in the use of more positive design or color? This I am not writing about, but would reply,

nowhere so long as we tie ourselves down to insipidity and namby-pambyism. No man ever learned to swim by keeping away from water. I had rather see an error on the side of loudness than the weak productions of an invertebrate timidity, and the errors need not be serious at any time. The very joy of using the stronger materials will guide the intelligent designer into safer paths.

But I did not propose to enter on this question, but rather to protest against the popular condemnation of all strong designing and coloring on the score of bad taste. I have seen people educated in other ways hold up their hands in horror at what was probably an exquisite composition in colour by an artist of world-wide celebrity. It is too much perhaps to ask such people to think for themselves, because in these matters they have probably very little basis for thought, but we may surely ask a practical admission that the highest taste may be displayed in the use of the strongest materials, and that true repose cannot be obtained where there is no latent strength.

THE RECENT EXHIBIT OF THE TORONTO ART STUDENTS' LEAGUE.

THIS Society, numbering a few rising young architects among its members, and in which, for that and other fraternal reasons, architects naturally take a friendly interest, showed by its last exhibition its increased and increasing vitality. Along with its vigorous young companion, the Toronto Architectural Sketch Club, it promises to have a considerable share in bringing about the future happy destiny of Toronto as an art centre. The apathy of the general public in all art matters that, almost forced such societies into existence, was a disguised blessing. If we may judge by the reaction which in the direction of art culture has evidently set in, the effect on public taste of such exhibitions cannot be doubted. Of course it is easy to be optimistic, and it does not follow that because the germ planted amid the cutting winds of neglect has really sprouted and bids fair to become a healthy plant, its final growth is assured. Unlike the Canadian Academy and Ontario Society of Artists, whose more recent exhibit is of so advanced a character of excellence, it has to prove its right by intrinsic value to a permanent place among the art institutions of the country. But as yet there are scarcely any other signs than those favorable to future prosperity.

Many recent press notices seem to us to have failed in estimating the educational value of the training given to the junior and rising members. Composed as the League is of all degrees of proficiency, from the well-known veterans, most of them members of other societies, to youths just advanced from a rudimentary style—yet all students—it stands to reason that the work of such men as Cruickshank, Blatchly, Bengough, Manly and Thompson (the president), must bear salutary fruit in the younger members working with them.

Without intending any reflection on these and some other senior members not named, the League is to be specially congratulated we think on the high class of talent displayed by a section of its junior members. It is almost invidious to select names, yet we cannot refrain from pointing to the general work of Mr. C. Challoner, C. W. Jeffries and H. M. Hidu.

The inclusion of lady students a year ago was an anxious experiment, but any impartial critic must now pronounce it an assured success. A portion of the fair sex have shown their capability in work quite up to the average of their brother students, and in the front rank of them it would be unfair to omit mention of Miss Jopling, Miss Nankin, Miss Palin and Miss Macklin. Almost all the lady students could thus claim honorable mention.

Diversified studies disclose varying powers, and those not quite to the front in the general line of work, *i.e.*, the study of the draped human figure of both sexes, still work hopefully and steadily on, in a true fraternal spirit.

Altogether, this last show of winter work gives the amplest assurance that a true art spirit is being fostered, and progress is being made towards establishing a permanent abiding place for art in this city. The Toronto Art Students League will certainly assist materially this object, and be other art influences what they may, give a good account of itself.

SANITATION AND HEALTH

HOUSE DRAINS.

NOW that the rush of new inventions, and the introduction of new schemes for the treatment of drains, and the arrangement of general sanitary work has somewhat abated, says the *Decorators' Gazette Plumber and Gasfitters' Review*, we have a better opportunity of gathering up and sorting out the best ideas from the many which of late years have been continually brought into public notice. And although house sanitation is now being looked upon more as an exact science than it was a few years ago, when the whole thing was but a wide field for experiment, yet there are several details upon which there exists considerable difference of opinion.

With regard to the principles upon which drainage and plumbing work is arranged there seems to be among those who have had a fair amount of experience in these matters a common ground of agreement. But the most debatable subject and at the same time one of the most important, is, undoubtedly, the question of materials. That a house drain should be disconnected and provided with efficient ventilation, is generally admitted, but when it is asked of what material shall it be constructed, it is difficult sometimes to come to a decision. As a rule the dispute is between the advocates of stoneware pipes, and those who are in favor of iron. It is contended on the one hand that the modern glazed stoneware pipes are the most durable, in fact, practically indestructible, because the acids in the sewage have little, if any, deleterious effect upon such an impervious material. Then, as regards the jointing, it is said that by the aid of certain patent methods the joints can be made in such a manner as to be absolutely reliable, even if the pipes are moved after the joints are made. Such an event, however, should, in our opinion, be strictly guarded against under any circumstances, and especially if the drain passes under the house. Those who are convinced that iron drains should be used when they have to be placed in the basement of a dwelling-house, claim that a metallic pipe can be laid and jointed much more securely, and subjected to a far greater pressure for the purpose of testing its soundness, than earthenware drains can withstand. It is also contended that iron pipes can be fixed in much longer lengths, therefore fewer joints are necessary, and owing to the greater strength of the metal, any subsequent movement of the earth surrounding the pipe will not interfere with the rigid character of a drain of this kind. As to the durability of iron drains, many hold that if the pipes are coated in a proper manner with a bituminous solution while they are hot, a protecting surface is formed which is very durable. And, according to some accounts, after pipes of this kind have been in use for several years, the coating is found to be in a satisfactory condition. It would, however, be very unreasonable to suppose that an iron drain would wear so long as one constructed of glazed stoneware. Each of the materials, therefore, have their advantages as well as disadvantages, which fact seems to point to one conclusion, and that is, that all drains no matter of what materials they are formed, should be fixed in such a manner as to be easily accessible at any time. And that whether they are constructed of iron or stoneware or any other material, they should be treated as a soil or waste-pipe which are generally placed in positions where they can be examined from time to time.

In our opinion, drains should not be buried either in earth or even concrete, but should be placed in ventilated channels or subways large enough to allow for periodical inspection, while a test of some kind is being applied.

Under such conditions as these, the kind of materials used can be a secondary consideration, but where a sound rigid foundation can be obtained there can be no doubt that a stoneware drain will give much satisfaction.

The largest system of hot water heating in use, says the Winnipeg *Commercial*, is believed to be that in the McIntyre block, Winnipeg, containing 600,000 cubic feet to be heated. The system uses four Plaxton boilers, which supply 28,000 feet of pipe in coils.

MANUFACTURES AND MATERIALS

BRITISH COLUMBIA MARBLE.

AT Rudge's marble works, Victoria, two fine specimens—the one of excellent sandstone, the other of pure white marble—are at present attracting the admiration of all interested in mineralogy, says the Victoria B. C., *Colonist*. The sandstone, which is of remarkably good color and grain, was recently discovered to exist in immense quantity on Addington Island, near Alert Bay. The samples brought down are of a fine, gradations stone, which cuts, saws or bores well, and which will stand fire better than any known fire brick. This last mentioned quality renders it especially adapted for furnace building, while it can also be used to splendid advantage by builders and in monumental work.

Addington Island, where the quarries are located, contains about one hundred acres of the sandstone. Messrs. Howson and Rudge are the owners of the valuable find, and their intention is to develop it at once. It is pronounced of harder, closer grain than the Vermont production, and is said to be comparable only with Italian. It cuts well and takes an unsurpassed polish, while its stolidity ensures its durability. Of the full extent of the supply which is contained in the mountain at Knight's Inlet, little is known. The deposit appears inexhaustible—at any rate, there is enough to last the Pacific coast for centuries. Rutland marble now monopolizes the trade of America, but the owners of the Knight's Inlet mine expect to compete successfully with the Vermonters, having a better article, which they will be able to sell just as cheaply. It is anticipated that the new marble will take the place of all imported material here at once, and that the trade that will be opened up by its exportation to the United States will constitute another important and profitable industry for British Columbia.

An effort is to be made to at once form a company at Kingston, Ont., to manufacture Portland cement.

A company is being formed in St. Thomas to manufacture water pipes. They will attempt to supply the material required for the new water works.

The Sicily Asphaltum Paving Company, with headquarters at Montreal, are seeking incorporation with a capital stock of $30,000 for establishing works for the preparation of asphaltum for paving streets, roads, etc.

A convention of the International Association of Adamant wall plaster manufacturers was held at the Leland Hotel, Syracuse, N. Y., on June 10th and 11th. All matters affecting the trade were fully discussed, and a pleasant and profitable time was spent. Messrs. W. J. Hynes, Manager, and W. B. Cherry, Secretary-Treasurer of the Canadian company, were present and took part in the proceedings.

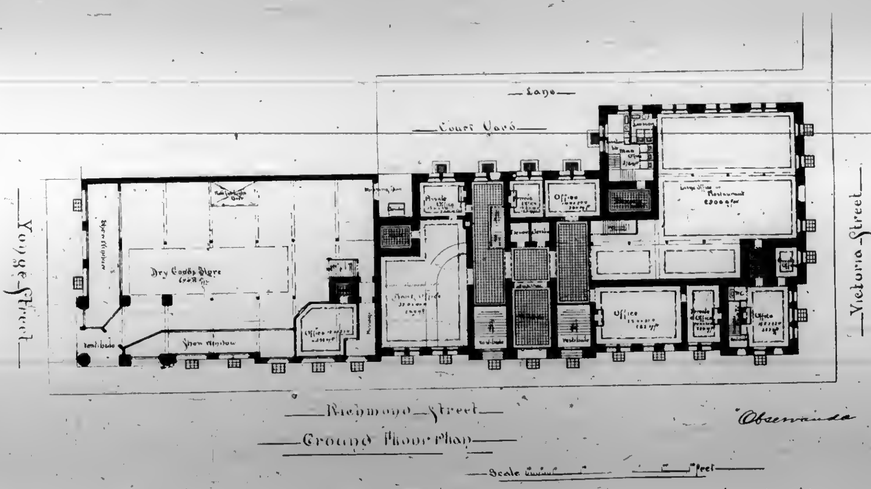
The Golden State Quarry Company, recently organized in British Columbia, are the owners of an extensive slate deposit near Kicking Horse River. There is now a surface of slate uncovered 30 x 500 feet, and the ledge runs into a mountain about 300 feet in height. The company intends to make roofing, slate copings for walls, window sills, cornices, brackets, chimney pieces, street flagging, etc. The quality of the slate is said to be first-class.

Third Premiated Design for Confederation Life Association Building, Toronto, Ont.

Mr. James Balfour, Architect, Hamilton, Ont.

Residence for Mrs. F. W. Wanklyn, Upper Drummond St., Montreal.

Messrs. J. W. and E. C. Hopkins, Architects, Montreal.



Office Plan, Third Premiated Design for Confederation Life Association Building, Toronto, Ont.

CANADIAN ARCHITECT AND BUILDER

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CONSTRUCTION · SANITATION · ENGINEERING

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—THE—

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ADVERTISEMENTS.

Prices for advertising sent promptly on application. Orders for advertising should reach the office of publication not later than the 12th day of the month, and changes of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The Ontario Association of Architects has appointed the "Canadian Architect and Builder" its official paper.

The publisher of the "The Canadian Architect and Builder" desires to ensure the regular and prompt delivery of this Journal to every subscriber, and requests that any cause of complaint in this particular be reported at once to the office of publication. Subscribers who may change their address should also give prompt notice of same, and in doing so, should give both the old and new address.

PUBLIC opinion in the United States is being brought to bear upon the State authorities to prevent the construction in future of buildings more than one-storey in height for hospital and asylum purposes. This idea strongly presented itself to the minds of the people of Canada on the occasion of the recent holacaust at Longue Point.

THE City Council of Toronto would do well to act upon the suggestion of the City Engineer to restrict the privilege under which one of the electric light companies has been tearing up the pavement on the principal thoroughfares for the purpose of putting its wires underground. The company are supposed to replace the pavement, but the manner in which this has been done is very unsatisfactory, and must entail heavy expense upon the city for repairs, not to speak of the patched appearance of the roadway. The damage thus far resulting from the company's operations has been comparatively slight, owing to the life of the pavement on the three principal thoroughfares having almost expired. In view, however, of the notice given the City Council of the company's intention to proceed with the laying of wires on a large number of the business streets, steps should at once be taken to protect the public interest. In England, it is said, the wires are laid beneath the flag sidewalks, where they are at all times easily accessible without much inconvenience to the public. What is to prevent the adoption of such a plan here, by which the destruction of costly roadways might be avoided and the streets kept in proper condition?

WE have frequently of late been asked to state when the Executive Council and Registrar for the Ontario Association of Architects, provided for by the Ontario Architects' Act, would be appointed. In reply to enquirers Mr. Townsend, Secretary of the Association, desires it to be stated that the Minister of Education in a letter dated the 30th of June, promised that the appointment of the Council would be made as soon as the Executive Council of the Government should meet, which he expected would be within a week. The appointment was not made, however, within this period. A meeting of the Council of the O. A. A. will be held a few days after its appointment for the purpose of appointing a Registrar, and when this has been done, the Secretary of the Association will notify every architect within the province whose name and address he may be able to obtain.

THE Civic Health Committee of the city of Hamilton have approved of a by-law providing for the appointment of a Plumbing Inspector, and defining his duties. The Finance Committee, however, has refused to provide the paltry sum of four or five hundred dollars required to pay the official's salary. Consequently, it is presumed, disease will unchecked continue to lay low its victims. This may be taken as a fair sample of the economy practised by city representatives. If some one should propose a junketing trip to the United States for the ostensible purpose of gathering information, but really in order that the aldermen might enjoy an outing at the expense of the taxpayers, it would be safe to assume that four or five hundred dollars or even twice that sum, would readily be forthcoming for the purpose. The refusal of the Finance Committee appears to be little short of criminal, in view of the insignificance of the sum asked for, and the important work which by its means could be accomplished. A city of 50,000 inhabitants cannot afford to do without plumbing inspection. The result of such false notions of economy must be a death rate that will cause the city to be regarded as anything but a desirable place of residence. The citizens who pay the taxes should insist upon the appropriation of the small sum required to secure official oversight of plumbing

THERE are three classes of individuals in the ranks of "organized labor." First and foremost are the walking delegates or professing leaders, who have seldom been known to exert themselves except to proclaim with loud voice and voluble tongue that they are the representatives of the wage earning classes. Then there are the individuals who are entirely devoid of ambition, content if they can but secure the pittance necessary to keep body and soul together, and never better satisfied than when, having helped to bring about a strike, they may lounge about in idleness, and draw an allowance of five or six dollars a week from the unions. To these two classes must be added a considerable body of intelligent, industrious workmen, desirous of making their way in the world by the

attainment of superior skill, and the putting forth of their best efforts. Were it not for the fact that this latter class are outnumbered and outvoted by the other two we should hear much less about strikes and the labor problem. A predominant characteristic of the first class mentioned is to endeavor to secure for themselves an easy living at the expense of the industrious men whose interests they profess to champion. The suggestion during the recent strike in the building trades in Toronto of the necessity of having a representative of "organized labor" stationed in the old country "to look after the interests of workingmen," might doubtless be traced to this source. The names could be mentioned of several self-styled representatives of the labor interests who so manipulated affairs as eventually to drop into comfortable positions in the Knights of Labor, civil service, etc.

OUR esteemed contemporary, the *American Architect*, says: "We imagine that some of our readers will be surprised to hear that architects in Canada are 'protected' by a tariff, which places an *ad valorem* duty on all plans of buildings imported into the Dominion, calculated upon the proposed cost of the buildings represented by the plans. What the rate is we do not know, but the tax is conscientiously collected. The duty is avowedly imposed for the protection of Canadian architects, and those of our own people who are called upon to practice in Canada will do well to look out for it. It is obvious that a duty amounting to a very small percentage on the cost of a building would be a very large percentage on the architects' fees, and architects should be particular to have it clearly understood with clients in the Dominion that 'all duties and expenses of importation of drawings are to be at the cost of the latter.'" The existence of an import duty on American plans entering Canada should not be a matter of surprise to American architects, seeing that the American government imposes duty upon the drawings of foreign architects. As to the conscientious manner in which the duty is collected in Canada, it can only be said that if the tariff is to be truly protective, the customs authorities must add to their conscientiousness a keener watchfulness of smugglers. The Canadian exchequer would be richer by many thousands of dollars if a well-known American architect had not succeeded in eluding the vigilance of the customs department. The Government should make a determined effort to convict this smuggler and make of him such an example as shall effectually put a stop to the practice, and make the tariff protective in reality and not in name only.

MR. Lacroix, Building Inspector for the city of Montreal, appears to be conscientiously striving to fulfil the duties of his position. Those who would evade the provisions of the building by-law find it difficult to escape his vigilance. Not unfrequently by his direction their work has to be pulled down and re-built in compliance with the regulations. Such conduct on the part of an official should give the highest satisfaction to the citizens and the council. Strangely enough, however, some of the aldermen have sought to throw obstacles in his path of duty and destroy his authority, apparently because his official acts sometimes conflict with the interests of their friends. An instance of this kind occurred at a recent meeting of one of the civic committees. A letter was read from a gentleman asking to be allowed to utilize in the construction of some buildings an existing wall which the courts and the committee had previously declared was not built in accordance with law. The applicant stated his opinion that the wall was strong, and he was willing to take the responsibility of using it in his buildings. The Building Inspector said the wall was defective, not having been constructed with good mortar, and produced a letter written by the owner in which he acknowledged that it was not constructed in the manner required by law. In the face of all this evidence, one of the aldermen strongly favored the granting of the application, saying he could see no reason why the permit asked for should be refused, and accordingly moved reconsideration of the committee's former action. The chairman could not find any legal authority for overriding the opinion of the Court and of the Building Inspector. A majority of the members of the committee displayed their good sense by coinciding in this view. Accordingly the action of the Inspector was very properly sustained.

THE attempt is to be made by the City of Toronto to establish technical schools for the benefit of young men who purpose devoting themselves to mechanical pursuits. This step has been taken none too soon. Our young men have for several years been at a disadvantage compared with those of the United States, where a number of very successful institutions of the kind are in operation. The sum of $9,500 is proposed as the initiatory expenditure for the purpose. Three schools containing in all ten rooms, having ten teachers and accommodating 400 pupils, are to be established in different parts of the city. The subjects to be taught are arithmetic, algebra, geometry, trigonometry, statics, dynamics, theory of construction, hydraulics, mechanical drawing, chemistry, heat, light, electricity and the elements of sanitary science. A board of directors has been appointed, representative of the Association of Stationary Engineers, the Trades and Labor Council, the manufacturing interest and the City Council, with Prof. Galbraith of the School of Practical Science. It certainly appears strange that no representative of the architectural profession or of the building trades should have been appointed on this board. From no other quarter can a larger proportion of applicants for instruction be expected, therefore a voice in the management should not be withheld. In order that justice may be done to all the interests concerned, and the sympathy and co-operation of all secured, the first opportunity should be taken to make good this omission. In view of the experimental nature of the undertaking, the wisdom of the decision to establish at the outset three schools seems open to question. It might have proved to be a better plan to concentrate the efforts of the management upon one school in the central portion of the city, and there thoroughly test methods of teaching and management, before extending the undertaking. Much depends upon the wisdom exercised in the conduct of this important enterprise at the beginning. Anything like a serious blunder made at the present time would undoubtedly retard the progress of technical education in Canada for many years to come.

CONSIDERABLE ill-feeling prevails against the Federated Builders' Association of Toronto on the part of contractors who have not identified themselves with the organization. It is founded on the allegation that through the influence of the Association the cut stone dealers of the city will not supply stone on equal terms to contractors outside the Association, but give them quotations so much above those supplied to members of the Association, that they are placed at a serious disadvantage in tendering. The intention is said to be to use this method of forcing outside contractors to join the Association. A contrary result seems likely, however, to be brought about. The outside men, associating themselves together, sent an agent to Cleveland to purchase a quantity of stone, and they express the opinion that the terms on which they can obtain it will enable them to compete with members of the association. Some of them express their willingness, under other circumstances, to unite with the Association, but refuse to be forced into doing so. They claim that an invitation has never been extended to them to join, and that the Association, even during the recent strike, manifested no desire to strengthen its position by adding to its ranks many reputable outside contractors, but now that the strike has gone against it, adopts the unwise policy of coercion.

It is due to the Association to say that its secretary disclaims any knowledge of a combination to raise prices on outside contractors, and suggests that "it may be that the cut stone dealers don't want to trade with these bosses." Whatever may be the fact, it would be very impolitic on the part of the Association to admit a combine, in view of the penalties imposed by the Anti-Combines Act, and the intention expressed on behalf of the outside contractors to test the value of that Act in connection with the matter under consideration. In view of the fact that the members of the Federated Association are outnumbered

three to one by contractors who are non-members, it is a foregone conclusion that any attempt to force the majority to comply with the will of the minority, must prove abortive. It is manifestly desirable, if not absolutely necessary, that a strong master builders' organization should be maintained. Without such organization, the master builders cannot hope to hold their ground against the demands of the unions. The latter are perfectly organized, and being in affiliation with the International Unions of the United States, are in a good position to enforce their claims. The recent strike in this city fully illustrated this, and also the fact that organization can only be successfully met by organization. So long as the master builders neglect to make use of the weapon which the workmen have used to such good advantage, they will lose ground in every conflict. It is not desirable that the struggles of the past between employer and employee should be perpetuated. On the contrary, it is believed that if the employers possessed an organization as perfect as that of the workmen, it would be a potent influence for the settlement of disputes without recourse to strikes, which under such circumstances would be certain to be of a very protracted character, and much more likely than at present to result in favor of the employers. It is a significant fact that for many years past the peace of Europe has resulted from what is termed an "armed neutrality." So it would be in the adjustment of labor disputes. The desire has many times been heard expressed for the formation of a Builders' and Contractors' Association for the Province of Ontario. The Toronto Federated Builders' Association should seek to bring all the reputable contractors of the city into its membership—not by coercive measures but by appeals to their intelligence and self-interest—and thus form the nucleus of a Provincial organization.

THE ADVANTAGES (?) OF EMPLOYING AN AMERICAN ARCHITECT.

MONTREAL, July 12, 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—During the recent political contest in Ontario, the name of a Buffalo architect was used very freely, and our own name was also quoted in this connection without our consent. At the same time, the facts which were brought forward against Mr. Waite as favoring Americans at the expense of Canadians were correct, and without any desire to injure Mr. Waite, we think it is only right that Canadian manufacturers and contractors should know how we have been treated by him in several cases, and to be able to avoid being put to the same trouble and expense for nothing as we have been.

The first instance of this was in connection with tendering for the iron work of the Bank of Commerce. In this case we were led to believe that our tender would be accepted, provided we could do the work in a certain time. We named ten weeks as the time in which we would complete the work, but upon the pretext "that this was not soon enough," the work was given to a Buffalo firm who promised to do it a few days sooner, but they took a very much longer time to do the work than was agreed upon, or than we had offered to do it, and we have been informed that in place of nine weeks they were nearer six months before the work was entirely completed. We enclose herewith an article from the *Trade Bulletin* showing how we were treated in the matter of the Canada Life building with comments by the editor.

Before sending in our tender for the Canada Life building, we got a letter from the manager of the Imperial Insurance Co. here, stating that we had recently completed iron work for their building in this city to the extent of some twenty-three thousand dollars, and that we had done our work in the best manner and promptly. This letter we forwarded to Mr. Waite, although after our thirty years experience in this country with this class of work, it should not have been necessary. The work was to have been completed by the first of July; you can easily ascertain in what state it is at present time.

Since the above we have another grievance, in which we were thrown out of a job on the same pretext, "that the time which we set for the delivery of the work was too long," although we had been asking for particulars of the job for at least four months previously. We have a letter from the parties to say that "they had been obliged to order the work in the States at a higher price in consequence of the architect considering that the time set was not short enough." Of course, this must directly or indirectly come out of the pockets of proprietors.

We are, yours very truly,

H. R. IVES & CO.

OUR ILLUSTRATIONS.

INTERIOR OF RECEPTION HALL IN SUMMER RESIDENCE OF HON. JUSTICE DAVIDSON, DORVAL, QUE.—A. F. DUNLOP, ARCHITECT, MONTREAL.

The sketch shows the interior of main hall viewed from the front entrance. On the left is the library, the entrance to which is hung with curtains, and adjoining is the dining room. On the right is situated the billiard room. The size of the hall is 18' by 27'. The ceiling is wood, with the joists dressed, molded, etc. The stair is of red pine, with French string of ash, turned ash balusters, cherry moldings and handrail. Underneath the platform of stair and facing the entrance, is a fire-place with cherry mantel-piece.

INTERIOR EGLISE DE ST. MARIE DE LA BEAUCE.—C. BAILLAIRGE, ARCHITECT, QUEBEC.

SKETCH FOR RESIDENCE IN ROSEDALE, TORONTO.—DARLING & CURRY, ARCHITECTS, TORONTO.

STILL ANOTHER COMPETITION.

"FROM bad to worse" correctly describes the condition of architectural competitions in this country. In proof whereof, witness the following circular sent out for the information and guidance of certain architects by the St. George's Society of Toronto: "A Company has been organized from members of St. George's Society, called the St. George's Hall Company, for the purpose of constructing a St. George's Hall on a lot on Elm St., 50 feet frontage, by 117 feet deep, the property of St. George's Society. The cost of the building is not to exceed from $13,000 to $14,000. The requirements for the special use of the Society in the building are as follows:—A committee room, two ante-rooms for applicants, four rooms for secretary's dwelling, and a hall as commodious as the ground will permit, certainly not less than 65 x 35 feet. For renting or revenue purposes, lodge rooms in the upper flat and such other arrangements as are most likely to be available and advantageous, are required, and I am instructed to invite you (though upon the express conditions that the Directors do not bind themselves to accept, or pay for, yours, or any other plans furnished) to furnish plans for the proposed building, together with an outside estimate of the total cost, not later than the 1st August next." To quote the words of the circular, the "advantageous arrangements" are all on the side of the Society; almost the only definite information given the architect is contained in the familiar clause freeing the Society from any obligation to accept or pay for any of the designs which may be sent in. Let the response on the part of architects invited to enter this competition be as liberal as the remuneration offered for their services.

THE ONTARIO ARCHITECTS' ACT.

WE publish, in full, in this number the bill which the architects of Ontario have succeeded in getting through the Provincial Legislature. While we congratulate our professional brethren over the line on their success in winning legislative recognition, and must award them the palm because they have succeeded where we have failed, yet we frankly confess that the "Ontario Architects' Act" is a disappointment. We doubt if any legislature in these United States would pass such a bill, and sincerely hope they would not. A state has undoubtedly the right to guard its citizens against incompetent practitioners, and the State of Minnesota has already done so in regard to the medical profession, but we hardly think a state has a right to delegate its authority to a private corporation. We do not see anything in the act to prevent a non-registered architect practising his profession; in this country there would

be enough first-rate men who would, under the circumstances, glory in showing their independence by keeping out of the corporation, while a large number of the small fry would rush in and become "registered architects" for the supposed prestige it would give them. With the best men out and the small men in how much weight would the title, "registered architect," carry with it?—*Northwestern Architect.*

AN ENGLISH OPINION UPON THE ONTARIO ARCHITECTS' ACT.

A PARLIAMENT has made the Ontario Association a body corporate, and passed "The Ontario Architects' Act," whereby from and after the 1st prox. "no person [within the Province of Ontario] shall be entitled to take or use the name or title of "Registered Architect," either alone or in combination with any word or words, or any name, title, or description, implying that he is registered under this Act, unless he be so registered"—under penalty of a fine; and whereby "every registered architect summoned to attend any court, civil or criminal, for the purpose of giving evidence in his professional capacity or in consequence of professional services rendered by him as an architect," is to be paid per day, in addition to his travelling expenses (if any) "the same fee or allowance as is payable to provincial land surveyors" attending such court. The act provides that every person registered thereunder shall become, *ipso facto*, a member of the association, and gives a council of nine members thereto, to be appointed in the first instance by the Lieutenant-Governor of the Province, and subsequently by ballot, as by-laws may ultimately decide—the first nine members to be British subjects residing and practising the profession of architecture within the province for at least ten years' before the passing of the act. The council are given authority to appoint examiners for the purpose of ascertaining and reporting the qualification of all persons who shall present themselves "for admission and enrolment as students at any of the matriculation, preliminary, intermediate, or final examinations;" and also to make by-laws respecting the "admission and registration of students, the periods and conditions of study, and the enrolment of architects as members of the association, and all matters relating to the discipline and honour of the profession." Sections 5-10, relating to the constitution and appointment of the council, and sections 21-24, which lay down definite rules respecting the qualifications of students desirous to register, are undoubtedly valuable and important, because they open a way for the association to permanently influence the welfare of young men starting in life as architects within the Province of Ontario. The act is printed at page 368 of this number of *The R. I. B. A. Journal*, and it also appears in the CANADIAN ARCHITECT AND BUILDER of April—a newly founded journal (now in its third volume)—which thinks that the Act, though in a great measure disappointing to the association, "should be considered as one step forward in the direction of securing for the architectural profession the recognition and respect which is its due; inasmuch as it enables the public to distinguish between the qualified and unqualified practitioners." But does it? And will an architect who carries to Ontario the certificate of Fellow or Associate of the Royal Institute of British Architects be distinguished by the inhabitants of that province as "unqualified" if he fails to register under the Ontario Architects' Act? Such a consummation is hardly to be wished, and the Council of the Ontario Association will probably not be long in finding it out. In one particular, however, they will be regarded by the architectural profession with curiosity; they are "the first by whom the new is tried." For though, during three centuries, the world has known that there are always architects and architects, a British Legislative Assembly has decided that, within at least the confines of the Province of Ontario, there shall be architects and "registered architects."—*R. I. B. A. Journal.*

—The Supreme court of New Jersey held that where one builds a party wall under a city ordinance authorizing and regulating city walls, he cannot claim the benefit of such ordinance unless the wall is of the thickness required by the ordinance, and otherwise conforms to it, and is without openings.

THE NEW TORONTO BUILDING BY-LAW.

IT is the intention of the Toronto City Council to put into force at no very distant date a new or rather revised by-law "for regulating the erection of buildings and the storage of inflammable material." By-law No. 627 is to make way for by-law No. 2468.

Unfortunately this new by-law is not much nearer perfection than its predecessor. Its framers have apparently not availed themselves of the assistance they might have had of men well versed in building matters, engaged in connection with building operations for many years, and whose opinion would certainly, one would have thought, have been only too readily listened to by those who had such a by-law to draw up.

But what is the use of such a by-law when there is no one to see that it is carried out? The City Commissioner is the appointed "Inspector of Buildings" for the purposes of the by-law, but his multifarious duties entirely prevent his giving his attention to plans or to supervision of buildings in course of construction, and much less time has he for looking after defective flues and drains and so on in existing structures, so that unless one of these things has become already a general public nuisance or many have died through breathing sewer gas, is it possible for him to take cognizance of it.

The new by-law gives him power to notify the owner direct, instead of having, as heretofore, to notify the Mayor or a Magistrate who in turn shall notify the owner. This no doubt saves time and avoids some amount of red tape, but how does the Commissioner happen to hear of any defective flue or drain or tumbling wall, when his own time is taken up looking after dirty lanes, the protection of shade trees and grass, and so on?

We have repeatedly urged the necessity of having an Inspector whose duties shall consist in looking after plans and the works being carried out, and hunting up defects in new and old structures, and the by-law expressly states that a "practical mechanic" shall be appointed to the post, but that for the present the Commissioner shall take upon himself an inspector's duties. A practical mechanic might possibly be better than the Commissioner, but do not let it be forgotten that there are practical mechanics and practical mechanics, and we very much doubt if the right kind of man for Inspector would be found among this kind of men.

We have not space to criticize the new by-law as we would like to do, but a few of the most glaring defects, in the failure to enforce a good clause when it exists, should be commented upon.

Who looks after our churches and theatres, and takes the trouble to notice whether the hose and apparatus for quelling an outbreak of fire is in good order before the play is commenced? Or who sees that the seats and doorways, corridors and doors, are arranged so as to admit of the most rapid exit of all the occupants of any public building? Clause No. 34 says that there shall be no filling up of aisles or passageways with seats, chairs or drawseats—that obstructions to egress shall not be permitted. This is certainly a good point, but who is to see it carried out? Has our Commissioner ascertained to his satisfaction that our theatres are safe, that they can be emptied of the largest audience *in two minutes*, that there is no undue risk of fire behind the scenes? When statistics show us that when a fire breaks out in a theatre there is only a space of time, on the *average of five minutes* between the alarm and *total extinction of life* within the Building, surely there should be no trifling about this particular.

Brick veneered buildings are still to be allowed within the limits of the city, provided they have stone foundations. Suppose fire breaks out from one cause or another in the frame building before the brick veneer has been added, what will be the result? total destruction of that particular building (which would be a good thing), and the probable destruction of a great deal of valuable property adjoining. One would have thought the terrible conflagrations in frame towns would have taught our council that there was folly here, if nothing else.

It is intended to extend the fire limits to the limits of the city—no doubt a good idea if the rest of the fire by-law was of any use, but they may as well fix by law the actual limits that a conflagration shall reach, as pretend to do any good with such poor and ill conceived clauses respecting protection from fire.

STEREOTOMY.

STONE-CUTTING.

J. A. PEARSON.

FIGURE 1 is the section of a battering curved wall. A. B. is the vertical height of the wall. Set off the batter at the base to the point C. Join A C, which is the face line, and divide it into the number of courses required. Drop the vertical lines cutting B C, at 1 2 3 4 5 6. The radius of

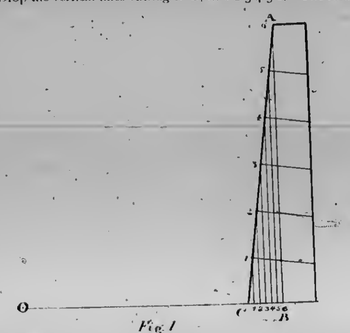

Fig 1

the different courses may now be obtained from the point O., which is the centre of the circle. It is required to work any one of the stones in the wall.

The beds of the courses of a battering wall are worked at right angles to the face, their front arrises running parallel. Make a curved templet to the radius of the front arris. The length of this templet must be a little more than the longest stone in the course. Each bed joint requires a separate templet, but the same templet may be applied to the top bed of one course and the bottom bed of the course above.

Bring A B C D and E F G H to plane faces parallel to each other. On the face A. B. C. D. apply the templet for the top bed, scribe the templet

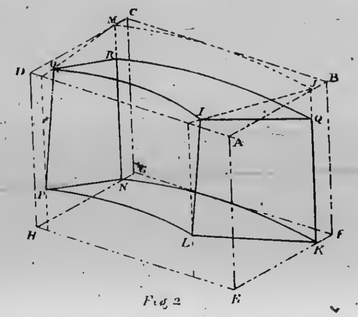

Fig 2

marking the radiating joints I J and O M, sink the drafts J K and I L square with A B C D, connect L K with a draft and bring to a plane face.

Work the joint M N O P similarly. With the bevel set to the angle of the batter of the face applied on the plane A B C D, raise the drafts I L and O P, run a draft to the scribed radius of the face I O, sink cross drafts in the length of the face, and with a reverse made from the radius of the templet of the bottom bed, connect L P. Straighten the face by repeated applications of the straight-edge between L P and I O. Work the back face of the stone J K M G square with A B C D. Work the top bed I Q O R square with the face I O P L, and the bottom bed L K N P square with the face I O P L.

QUEBEC.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

AMONG the improvements being made to the Basilica is the lowering of the boundary wall on Buade St. In taking down the wall a rather ancient marble slab has been removed bearing the following inscription:

"In memory of the wife of Thos. Ainslie, Esq., collector of His Majesty's Customs of Quebec, who died March 14th, 1767, aged 25 years.

If Virtues' charms had power to save
Her faithful votaries from the grave,
With Beauty's every form supplied,
The lovely Ainslie ne'er had died."

The slab is plain, bearing on a carved moulding, which is carried by two corbels built into the wall. It will be placed in the gable wall of an adjoining building abutting on the space enclosed by the late boundary wall. In past times this was used as the burying ground for the parish in connection with another enclosed space on the north side of church. The bodies were removed many years ago.

The contract for paving with wood blocks the lately widened St. John street has been given to Mr. W. J. Peters, at the rate of $1.70 per super. yard. The sidewalks will also be formed of wood blocks. The plan adopted and specified by Mr. Baillairge, City Engineer, is as follows: A double floor of spruce to be laid, the lower one 2" thick, the upper one 1"; upon the latter sound tamarac blocks 7" in depth to be placed, the interstices to be filled with bitumen or cement, the Road Committee being as yet undecided as to which would be the better material to use.

Mr. Parent is making a handsome addition to the list of new buildings on this street. It will be three stories in height and mansard roof. The front is of fine cut Beauport stone with Deschambault lime stone enriched trimmings. The plans prepared by Mr. Peachey, architect, provide for a shop on ground floor and dwelling above; cost will be about $8,000.

The June number of the CANADIAN ARCHITECT AND BUILDER has the following item: "The largest system of hot water heating in use says the *Winnipeg Commercial*, is believed to be that of the McIntyre block, Winnipeg, containing 600,000 cubic feet to be heated. The system uses Plaxton boilers which supply 28,000 feet of pipe in coils." This statement is a very incorrect one, as I am quite sure there are many much more extensive systems than the one above given. The Provincial Parliament Buildings in this city have a cubical space to heat of 4,667,000 feet, the buildings aggregating in length 1,032 feet, with a width of 42 feet, and height 56 feet, four pipe furnaces with eight fires are used with the best results.

Mr. F. X. Berlinguet, architect, has been named Deputy Commissioner of Public Works for the province of Quebec, in place of Simeon Le Sage, Esq., retired; so say the French papers.

Mr. L. Parquet, the great retail dry goods merchant of Quebec, having instructed Mr. J. B. Bertrand, architect, to prepare plans for the building of an additional store to enlarge the premises already occupied by him on St. Joseph street, that gentleman on the 17th of June awarded the contract for the front, which is to be 47 feet frontage and six stories high, to be built of Stanstead granite with 32 polished columns, etc., to Messrs. Laforce & Son, Quebec. The contract for masonry, brick and plastering, was given to Mr. J. B. Jinchereau, of Quebec. Shortly M. Bertrand will call for tenders for steam heating apparatus, dynamos, plumbing, painting and iron works. This new building of 135 feet depth, together with the two other stores, will give 64,908 superficial feet of flooring for the retail trade of Mr. Parquet. Add to this several warehouses of proportionate dimensions, and we must say that for a small city like Quebec, it speaks well for Mr. Parquet's enterprise.

DEFECTIVE CONSTRUCTION.

IN a recent number of the *Building News*, attention was called to defects of construction that were common to most building undertakings in England. What has been said of them will apply with almost equal force here. Where concrete is specified as a footing for masonry walls, it has become a practice on the part of some of our contractors to have the concrete thrown from a height into the trenches, when it is a matter of experience that an unequal resistance is offered by this means of concrete laying, as the material is consolidated at certain points only, and the intervening lengths are simply shovelled in or levelled. The chief objection to the throwing is that the heavy ingredients are separated from the fine. The best plan is to deposit the concrete by shovels and consolidate the mixture by a sort of gentle ramming or kneading.

Concrete should be composed of broken stone or gravel that will pass through, by its largest cross-section, a two or two and one-half inch ring, free from dust and dirt, and be screened if required. To be thoroughly mixed with three-sixteenths of its bulk of mortar, carefully put into place by an improved process and rammed or pressed gently to a solid mass. The stone may be furnace slag or hard brick. The stone should be spread out evenly in a layer not to exceed six inches in depth, and sprinkled so as to slightly wet the surface of all the stones. Upon it should be spread evenly the proper quantity of mortar, freshly made; the whole is then to be quickly and thoroughly mixed until every stone is coated with mortar; water must be gradually added by sprinkling, if necessary to obtain a better consistency.

Concrete should not be mixed in larger quantities than is required for immediate use. Any excess that has been standing for more than two hours should be condemned. Concrete over two hours old cannot be retempered and used with any safety. Concrete layers should not exceed nine inches in depth at one deposit, while six inches in depth at one ramming is considered better practice. As soon as it is in position it should be settled into place by slight ramming, just enough to flush the mortar to the surface.

When a fresh layer is to be put on one which has set or partially set, the entire surface should be previously made thoroughly wet. When in place, all wheeling, working or walking on it should be prohibited until at least twelve hours after being deposited.

All dirty or dusty stone should be screened or thoroughly washed before it can be used. One of the most frequently occurring practices is to litter up the top surface of concrete footings with dust, dirt, shavings and debris of all kinds, without taking any particular pains to clear it off when a new

layer is to be deposited. All work in the process of hardening should be protected by a temporary plank covering.

In brick-work, one sometimes finds broken bricks, spawls and fragments used to fill up chunks in the backing of a brick arc. It is almost unnecessary to say that broken bricks are not to be used except as closers.

Failure is frequently found to take place at an angle or pier because the line of pressure has not received proper attention. Another defect is a want of care in selecting the proper material in the wall work adjoining the angle. This is true, of course, only in stone masonry. Generally a corner or an angle is built up with extreme care (where such corners are built up in the solid), and the supporting walls are made up of stone of variable sizes and indifferently bonded, and the result is a settlement or break in the supporting wings. In angles or corners toothed in and anchored by means of irons, as practised in this city, the angle or corner is in reality the weakest portion of the building.

It is not necessary to try to prove that bonding fresh work into work that has been set or hydrated for days, by means of toothing, supplemented by anchorage, is a very poor substitute for solid corners or angles. If there is any doubt in the matter, it will be necessary to examine but few of the present structures in our streets to be satisfied of the truth of this assertion. Corners and exposed angles should, more than any other part of a building, be a matter of especial care in construction, as they are generally the most exposed to the action of the elements, and exhibit the first signs of decay. This is seen on chimney corners, apices of cables, tops of walls, brackets and cornices. In England lead copings are used to a large extent. In this country asphalt has been used, Portland cement at times and stone copings the most frequently. Slate slabs, one and one-half to three inches in thickness, according to the width of walling to be protected, form a splendid protection against weathering. In some of the better class of buildings, earthen tiles are used as copings, but it is proper to remark here that where such tiles are used the top surface should be glazed, and the joints be lap-joints, laid in lead and caulked, or in asphalt properly applied.

The temptation to span every large opening with an arch, using deep voussoirs, and backing this up by a relieving arch, has brought many a contractor to expensive grief. Precedents cannot be relied upon to guard against the thrusts of an arch, for each arch built is a separate undertaking, its load may vary considerably from what apparently a similar arch sustained, and the consequence is that its construction involves a new problem in mathematical "pyrotechnics," as some contractors have derisively termed the calculations. The most frequent cause of failure, however, is due to disregard of the piers or abutments upon which such arches are placed. It is a very good rule to avoid the placing of an arch in such a manner that its opening is partly over an opening below it. In other words it should spring from a solid pier with no break in it to the foundations, in line with the point of springing. And when supported by piers alone, such piers should be loaded sufficiently from above to withstand the thrust of the arch which acts upon the pier to overthrow it. In technical language, the moment of stability of the pier must exceed the moment of thrust of the arch.

MONTREAL.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

MONTREAL HARBOUR IMPROVEMENTS.

NO definite information regarding the order in council reported to have been recently issued has yet been made public. It is understood, however, that plan No. 6 as submitted by the Harbour Commission will not be adopted in all its details. It is stated that a few days before Mr. Page's death he submitted a supplementary report to Sir Hector suggesting that a commission of five engineers be appointed to consider all the plans submitted and to prepare from them a final plan, embracing any good feature of each. He drew the attention of the Ministers to the danger of flooding Longueuil and St. Lambert's, and hinted that the Government might be held responsible for damages resulting in securing better harbour accommodation for Montreal. It is not known whether these suggestions will be adopted or not, but an answer is daily expected. It is also reported that a French engineer has submitted to the Public Works Department plans for the Montreal harbour improvements, embracing the features of many of the other plans, and providing an addition for a system of Glance piers from the head of St. Helen's Island to Victoria bridge, the removal of half of Isle Rond and the deepening of the south channel below St. Lambert's.

If the commission recommended by the late Mr. Page is appointed, I hope the "Shearer scheme" will be submitted and fully explained to them, when, I have no doubt, it would receive favorable consideration and give at the same time harbour improvements, wharfage accommodation, prevent floods and connect the north and south shores of the St. Lawrence. If it were only a question of preventing floods, I think the cheapest and most effective plan would be a system of booms in Lake St. Louis and Lake St. Francis, (which would cause the lakes to freeze over and prevent the ice coming down until the river was open below) and deepening the channel between St. Helen's Island and St. Lambert, thus causing the main body of the river to pass in the south channel in place of the north as at present. If properly carried out this would have the effect of doing away with the St. Mary's current.

STREET WIDENING.

Like most old cities laid out by French engineers, Montreal's streets, especially in the business thoroughfares, are far too narrow; and the city council for the past year or two have gone in for extensive widening. Last year St. Lawrence Main Street was widened at what was considered a very high cost, but Notre Dame street, from McGill to Chaboillez Square, which is about to be widened, has opened our eyes to what an expensive luxury street widening is. The report of the commissioners on expropriation was filed on Friday. There are some thirty-three property owners and their tenants interested, and the award of the commissioners shows the cost of this comparatively small widening to be between $600,000 and $700,000. The improvement is no doubt a desirable one, but the question arises, is it worth the amount it is going to cost to effect the improvement? Might it not be cheaper to widen both sides of St. Maurice Street, which is a street parallel to Notre Dame, and commencing at McGill Street and terminating at Chaboillez Square? Another and probably more important question is, should not the citizens form some sort of protective society to watch all the expropriation meetings through a first class lawyer, whose duty it would be to see that the proceedings were regular, the evidence revelant and the commissioners' awards equitable.

I have before me a detailed report of the commissioners referred to, and on examining it I decided that I would rather be a tenant than a proprietor. For instance, one proprietor is to receive $21,719 nominally, but in reality about one-half this amount, as the other half will be levied for street widening, while two of his tenants receive about $10,000 clear for forfeiting their lease. Another receives $20,144 nominally, and his tenants $12,600. Another owner gets $14,756 nominally, actually one half of this, and one of his tenants $12,135, and another $1,782. Now I hold that if a properly organized contestation of these awards is made, that any Court of Justice would reduce very considerably the lessees' awards. It has been a known fact for some time past that Notre Dame Street was to be widened, and tenants leasing the stores were fully aware of it at the time. Some of the leases went so far as to state that the tenant in the event of the street being widened would have no claim against the owner for damages, and yet the city is bound by the commissioners' awards to pay them heavily. It would almost pay the city to have notified the tenants of their intention to widen the street, and await the expiration of their leases, than to pay such heavy damages.

I believe the City Surveyor's estimate for damages was about $180,000.

MOUNT ROYAL PARK INCLINE RAILWAY.

The extension of the above railway from the foot of the mountain to Fletcher's Field has been completed, and was yesterday open to the public. The station is not yet finished, but the road was yesterday thoroughly tested by upwards of four thousand people who availed themselves of the opportunity to visit Mount Royal Park. Everything worked splendidly, and notwithstanding that the machinery, ropes and track were new, and hardly could be expected to be into gear, everything went off like clock work. It is a great acquisition to the poorer classes; the only objection is that it does not go far enough. It should, properly speaking, be continued to the corner of Craig and Bleury streets. The length of the new incline is about 12,000 feet, is drawn by steel cables provided with safety ropes, with tension weights at either ends to take up the slack of the rope. The machinery is of the strongest and best type, and has been built in Montreal under the personal supervision of the company's engineers. The grade is one in twelve for the lower portion. About 600 feet of it is of timber trestle, and the balance through rock excavation. The upper elevator is five hundred feet long, and rises some 420 feet in this distance. Both roads have been recently tested at the request of the City Council by the City Surveyor and the engineer of the Dominion Bridge Company, who reported that they found everything in first-class order and perfectly safe. They submitted the road to some severe tests. The road has been built with every possible care under the supervision and specifications of W. McLea Walbank, C. E., and Capt. James Wright, M. E., the former having charge of the civil engineering and the latter the mechanical department.

BUILDING NOTES.

A large residence is in course of construction for Mr. Ross, C. E., late of the Canadian Pacific. I understand the plans were prepared in the first case by a Montreal architect, but for some reason best known to himself Mr. Ross has seen fit to dispense with the services of his Canadian architect, and to employ a Boston architect to make new plans and carry out the work. I cannot understand how it is when Canadians have any money to spend they always avoid local men and prefer to employ alien architects. It is to be hoped "every dog will have his day." The only thing left for the local architects to do will be to see that duty is collected by the Customs for the plans in question.

In pile driving, it is said in the University of Michigan *Technic* to be held by many experienced engineers, both on the Atlantic Coast and on the Mississippi, that for ordinary ground the pile should not be sharpened. They say that the pile if sharpened rarely has its point in the neutral axis, and that the blows of the hammer are not applied so that the action-line of the force passes through the point, and hence a couple is introduced tending to strain and weaken the timber. If, on the other hand, the pile is left blunt, the consolidated earth forms a point which, changing with each blow, keeps itself continually in the line of force and hence the straining couple is not introduced. In ordinary practice, however, the pile is tapered somewhat at the lower end, although not sharpened to a point.

INTERIOR EGLISE DE ST. MARIE DE LA BEAUCE.

SUPPLEMENT TO
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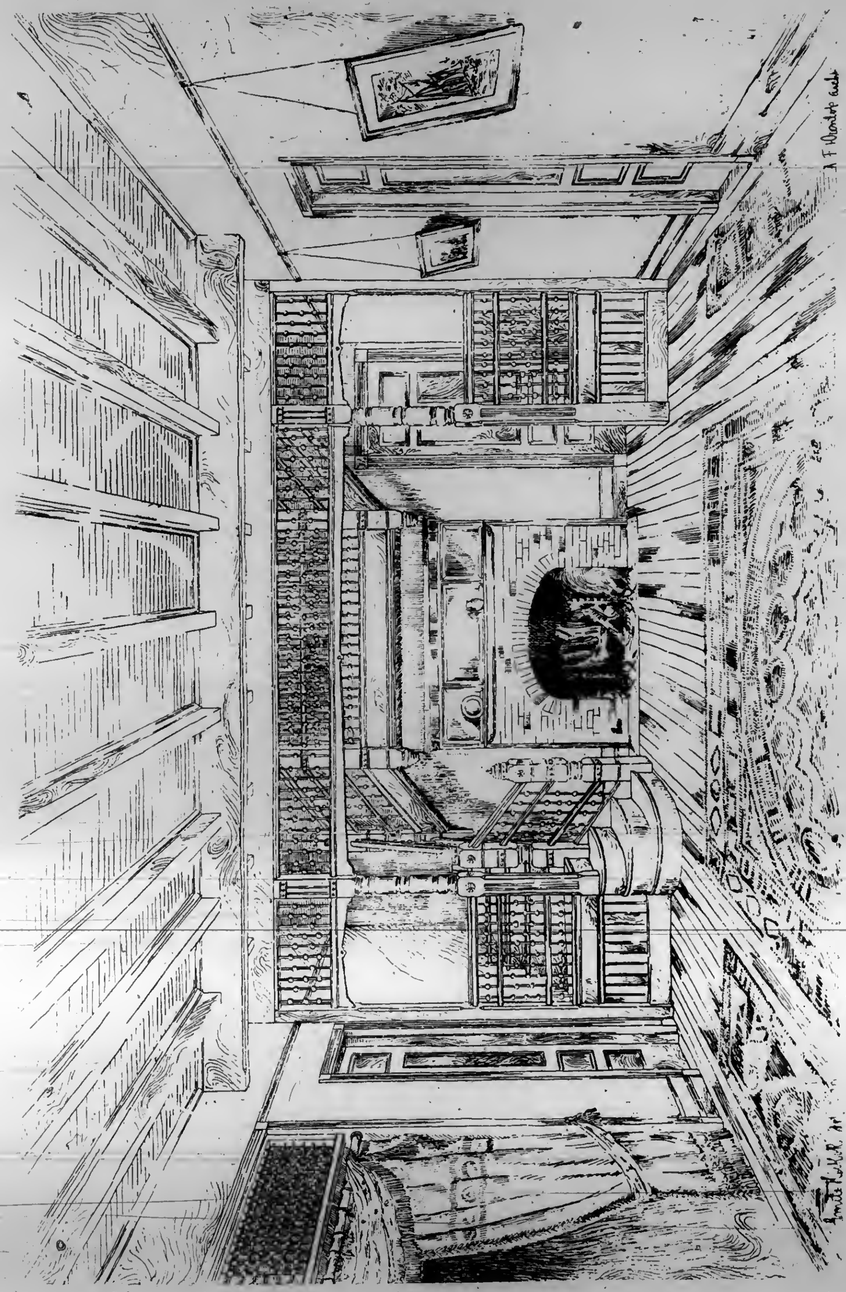
C. DAILLAIRGE, ARCHITECT,
QUEBEC.



Interior of Reception Hall in Summer Residence of Hon. Justice Davidson, Dorval, Que.

A. F. DUNLOP, ARCHITECT, MONTREAL.

SANITATION AND HEALTH

PLUMBERS' WORK AS APPLIED TO THE DUTIES OF SANITARY INSPECTORS.*

I WILL endeavor to deal with a few details in which plumbers' work bears directly upon that part of a sanitary inspector's duties where he has to examine, condemn and refix drains, water-closets, baths, etc. I consider our first and chief duty is the prevention of disease; when disease appears, to trace its source, also to remedy the cause (if possible) so that it may not recur again. In this duty we are constantly brought into contact with plumbers' work in the shape of waste, soil, rain-water pipes, drains, &c. Although the latter may not be, strictly speaking, the work of the plumber, yet on many large and good jobs the plumber is held responsible, and has the superintending of the laying of the drains; especially is this the case where drains of this kind have to be brought to meet his soil or waste pipes; at any rate, a plumber ought to be able to know what size his pipes will require, and why such size.

Before we proceed any further, I think we ought to consider what system of drainage is best, viz., the "trap" or the "trapless system." In a very able paper read before this association in September, 1888, a gentleman gave as his opinion that the latter was the perfection, or, to be more correct, the acme of perfection in house drainage. I have my doubts about this matter, for reasons which I will not try to explain. I do not wish or intend to set up my knowledge or experience, which are both very small, against the knowledge or experience of the reader of that paper, but there were one or two points not dealt with which I think come entirely within the subject of my paper.

In the first place, the "trapless" system is a misnomer, for a trap is used to intercept or disconnect the drains from the sewer; secondly, I think the great objection to it is that there is no check to prevent the disagreeable odors, waste pipes, etc., from entering the house. Experience seems to show that, be the waste pipes of lead of the best workmanship, laid with the greatest care, all burrs and sharp bends avoided, in fact, a perfect job so far as the making and laying of the pipes are concerned, in a few years time, if not before, there will be complaints of disagreeable smells arising from the cement or other soap which has congealed to the sides of the bath and lavatory waste pipes, or from the soil which has found a resting place on the sides of the soil pipe. For the first few months all will go well, but by degrees the smooth bore of the pipe—to use a plumbers' phrase—would be "eaten into," *i. e.*, the water and air acting alternately on the lead would have a chemical effect, causing the smooth bore to become rough; then, instead of cleansing themselves they would become more and more fouled.

This is what suggested itself to me if the pipes were of lead. But, if the pipes were iron, it seems to me—from what I have read—that they would become foul in a much shorter time. An experiment was made in the room by the same gentleman to show that sewer air will pass through any number of water barriers; this seems to be a greater reason why the "trapless system" should find little favor. I, and I am sure all of us are, open to conviction, and if any gentleman in the room will try and show us, from conviction and otherwise, that the "trapless system" is the best, we will use our poor influence to bring about this "acme of perfection." With regard to the trap system, I think the old fallacy that because a pipe is trapped, therefore there can be no danger, is fast dying, else why disconnect soil-pipes and waste-pipes at the foot. We claim for traps that they can keep out any sewer-gas that may escape, and certainly they keep out any disagreeable odors of soap and soil that may lodge in the pipes. If the soil and waste-pipes are well and properly ventilated, there can be no danger of a pressure upon the traps, and if the traps are regularly flushed out, there can be no danger of the water in them becoming foul. No doubt there is much to be said for and against both systems, but on these I do not intend to enter; it is too large a subject for a paper like this is intended to be.

Having thus briefly touched upon the trap and trapless systems, it devolves upon me to say something about traps in general. Trap-making is one of the great arts in connection with the plumber's handicraft. In many large shops they keep what are called "bench hands," who are engaged upon nothing else but the making of traps, bends, etc. Traps and trap-making is a part of plumbers' work which has a direct bearing upon a portion of our duties; for how often are we called upon to examine the traps of a house where typhoid or diphtheria has made its appearance. Perhaps, in the whole history of sanitary matters, no article can be found which has more perplexed the British householder than the article known as a trap. Each inventor, vendor and fitter-up has lauded some such contrivance. The essentials of a good trap are, that it should be self-cleansing; that the water should be changed every time of using; that it should be free from any working parts likely to get out of order or become fouled; that it should hold enough water to prevent the escape of any noxious vapors, and not too much surface exposed to the air. For ordinary purposes the lead S or P trap, properly made, fulfils all the above conditions. No doubt this is the reason why patents of various other sorts find so little favor. There has been put into the market cast and drawn lead pipes of the shapes mentioned, but it has been found that they will not last as long as the hand-made trap. For some reason or other, they collapse completely. Then, there are other makes of lead traps in the market, *e. g.*, the old D trap, which we rightly condemn for reasons upon which I need not dilate; and yet the old D trap has its good quality, which is such a good one that it has been produced in a new form, and finds much favor in the south, I mean the "geometrically formed trap." It is almost the same shape as the old D trap, but so constructed that it conforms to the requirements of a good trap. The good quality of the D trap is that it is not so easily syphoned as the pipe trap; this, when a number of water-closets or sinks are fixed on a length of pipe, is a great consideration. This syphonage can be obviated to a great degree by fixing a number of relief (or ventilating) pipes; but in every case the fixing of these is an impossibility. I need not enter into the merits or demerits of the different kinds and makes of traps. We are all familiar with Buchan's, Bowers', &c. Our duty lies not in the making of the traps, but in the fixing. I do not for a moment wish to imply that we ought not to know the advantages and the disadvantages of the various makes of traps, for it ought to form part of our duty to acquaint ourselves with all the different forms and makes. With regard to the fixing of traps (for the present I exclude the water-closet traps), the trap ought to be fixed perfectly level, or on such a slope that the water seal is not too much diminished or done away with altogether. It ought to be fixed as near the bath or sink as can be. Sometimes we get complaints of unpleasant smells from the fact that the trap has been fixed too far away—perhaps two or three feet away—from the inlet, leaving this length of fouled pipe to cause the smell complained of. This happens most often when a "running, horizontal or U" shaped trap has to be fixed. For the convenience of making the joints, the plumber will leave two or three feet more pipe than he has need to do. This kind of trap is rarely used when a P or S trap can be fixed.

I think it will be obvious to us that a trap is better if made in one piece, but as they take a longer time in making, they are more expensive; consequently we generally find traps made in two pieces and soldered together. The great art in trap-making is to get the lead equal in every part; there is a tendency for the lead to get thin at the edges and thick at the center. If a trap is fixed in this state, the hot water will cause it to expand, the cold water to contract, and the trap will give in the weakest or thinnest place, viz., the seams. No doubt we have seen traps that have given way in this manner. Another reason for traps giving way at the seams is the galvanic action set up by the two metals used in the solder, and the water and air acting upon them alternately; so that when we are examining lead traps we ought to carefully examine the seams, for although the defect may only be enough to allow a drop of water to escape every minute, yet that drop will cause the trap to become unsealed.

Now, a few words on water-closets and the fixing of them, for it is in this part of our duty that we need a good knowledge of plumbers' work. The first thing we require to know in the alteration or carrying out a system of the disposal of fœcal matter by the water carriage system, is what kind of a water-closet apparatus we are going to fix. There are such a number of "perfect sanitary closets" that the difficulty is to pick out the most perfect. The valve water-closet finds great favor with some of the leading sanitarians of the day; there is no doubt it possesses advantages over many of the water-closets now put into the market, but there are several drawbacks to its general use, *i. e.*, it is too expensive for common use; there are too many working parts about it, and it is not so cleanly as the earthenware: therefore, I think we can divide water-closets into two divisions, viz., the wash-out (manufactured in one piece) and the hopper and trap. Personally, I have great objection to the wash-out. It offers, to my mind, several objections; first and foremost, it is not as clean as it might be. I have taken particular notice of several that have been fixed, and I find that the back part of the outlet of the basin is oftener than not covered with filth. Several have told me that this is due to inefficient flush, but to my mind it is due, not to the inefficient flush, because I have noticed that it is not only in the back and side of the flush wash-out, but in those with a flushing rim where the water drops direct on the part complained of, but it is due to the water not being able to scour the back part of the trap. Another drawback is that if it is used as a urinal, as a water-closet ought to be used—for urinals are objectionable in private houses—the urine trickles over the basin and causes not merely the staining of the basin, but in time an objectionable odor; this will be especially noticeable if the closet is used by a number of females. Again, if the water-closet happens to become choked, the whole apparatus has to be taken out to unstop it, and I can tell you from experience that it is anything but a pleasant job. In the hopper and trap none of these objections offer themselves, provided we get a good form of basin with a good scouring flush; the best I have seen in the market was a pattern made by Dodd (late of Cable street). The hopper and trap can be used as a urinal if fitted with an earthenware top, without any fear of objectionable odors arising therefrom, for it can be scrubbed every day with a brush, and each and every part can be so cleansed if the seat is hinged so as to allow of it being raised for this purpose. I assisted to fix this form of water-closet in the Hospital for Women, Shaw street, and they gave the greatest satisfaction. Now, as to the mode of fixing water-closets in general, the soil-pipe is the first to be fixed; this ought to be fixed outside th

* Read before the members of the Association of Public Sanitary Inspectors of Great Britain by A. E. Adams, R. P. C., Asso. San. Ins.

premises, disconnected at the bottom by a trap made specially for that purpose, and carried by a continious line of pipes to a safe distance above the roof. The branch-piece that attaches the water-closet to the soil-pipe ought to receive our particular attention, for I am sorry to see many plumbers using the iron branch-piece; this branch-piece is too short to receive the outlet of the earthenware trap, which means that a piece of lead pipe has to be inserted into the iron socket and over the outlet of the trap, making two joints in place of one, and one of these joints buried very likely in the wall. This joint being made with putty or red-lead is apt to crack or break; if this happens we have the whole fumes of the soil-pipe escaping into the house, and where the soil-pipe is not disconnected, sewer-gas finds only too ready an entrance.

Let us discourage, as far as we can, the use of iron branch-pipes; the branch-pipe ought to be made of lead, with an arm sufficiently long to reach the earthenware trap. This branch piece is better made of three pieces of lead than soldered on to one perpendicular piece, as is most common, for a reason which I will give later on. The joint between the earthenware trap and lead ought to be fixed by means of a lead flange, bolted on to the flange of the trap, packed with red lead, paint and tow. The joints of the soil-pipe, presuming them to be iron, ought to be rusted together, which is made by mixing iron fillings, sal-ammoniac, water, and a pinch of sulphur; the joints are packed with tow, hemp or rope; the rusting is then driven tight into the joints by tools made specially for that purpose. Before the trap is finally placed in position, it ought to be tested as to whether it is a trap, for I remember a large house being fitted up with new sanitary arrangements, and the last state was worse than the first—owing to the water-closet traps being no traps—for when the job was done it was discovered that the water seal in the water-closet traps formed no barrier to the escape of sewer-gas, and new water-closets had to be substituted at the cost of the firm carrying out the work. Various cisterns are used for the various patterns of water-closets, but perhaps the best is the simplest form of syphon system we can get, for the reason that persons very often, when using a water-closet, neglect to hold the handle long enough to ensure a sufficient flush. In making the selection of a cistern, we ought to try and get a ball tap that will allow of the cistern being filled as quickly as possible after it has been used. If we get a slow-filling cistern, the probability is that the next time the water-closet is used, there will only be a partial flush. The cistern ought to be fixed, if possible, directly over the water-closet, so as to allow the full weight and force of water to cleanse the basin and trap; if we cannot get above four feet of a drop from the bottom of the cistern to the basin, a 1½ inch pipe ought to be used; if over four feet, a 1¼ inch pipe will generally be sufficient. There is a great knack in the way the flush-pipe enters the basin so as to obtain a good scouring flush. I cannot enter into the various methods employed, or the various shapes the mouth of the pipe is made to ensure such a flush, for their name is "legion," except to say that cork or wood should *not* be employed, for in time these temporary methods will come out of the place, and the flush perhaps be worse than ever. The putty joint is made as follows: The arm of the basin and the flush-pipe is painted just around the arm; the putty is then laid around the two, over this is carefully wrapped a piece of rag, which has also received a coat of paint, and then to bind the whole together a long piece of string is tied in a peculiar manner known only to the craft. The joint is thus made, and may receive, if thought necessary, a coat of paint, which will tend to bind them all together.

A few remarks on the water-closet branch-piece, and then I have finished. I stated that the branch-piece is better made out of three pieces of lead and soldered together than the branch-pipe soldered on to the perpendicular soil-pipe; but even this plan is better than an air-pipe taken from the top of a bend—the first-named plan is the best for several reasons. (1) We get the full bore of the pipe both for the soil and air-pipe. (2) There is no chance of any solder to form a burr or projection into the pipe. (3) The danger of allowing the branch-piece to the socket into the perpendicular pipe too much, or the air-pipe to socket too far into the soil-pipe, is obviated. A few of the mistakes that may occur—unless the greatest care is exercised—in the two last-named systems of branching air-pipes on to soil-pipes are: The solder in making the joint may run inside and form an obstruction to the soil and paper; the branch-piece may be socketed too far into the perpendicular pipe, and so allow an accumulation of filth to gather; the branch-pipe may get moved from its angle before soldering, and thus cause a bad joint at its upper end. Those of you who know the mode of getting the angle and fixing these pipes will understand what I mean. The soldering of an air-pipe on the top of a bend coming from a water-closet is the worst plan of all. Oftener than not, the top of the bend is only opened out to 2½ or 3 inches diameter, then a 4-inch socket is planted on the top of the opening and soldered, so that really we only have a 2½ or 3-inch air-pipe. Again, this socket-pipe may be lowered too far in the bend, thus forming a barrier to the passage of the soil, and if it does not actually cause a stoppage, it allows the accumulation of filth, which is far from desirable.

There are several small items I would like to have pointed out to you in connection with this part of my subject, but I think I have said enough to show you that there are many small details which we would do well to study.

Messrs. R. McDougall & Co., of Galt, have sent us a handsome lithographed hanger, on which is displayed perspective and sectional views of the Plaxton hot water boiler, of which they are the manufacturers.

DECORATION AND FURNITURE

DECORATION OF HALLWAYS.

NOTHING can be more stiff and unattractive than the old-fashioned long, narrow hallway, which is a mere passage and needs to be relieved by a few artistic effects. Modern architecture serves to break up the long straight lines, especially in country villages where there is a chance to throw the staircase into a niche built for that purpose at one side, or to carry it up by easy stages from the rear of the small reception room into which the hall is thus converted.

Luxurious dwellings, costing many tens if not hundreds of thousands of dollars, are, of course, entered through stately apartments which give dignity and value to the whole structure. It is not of such that we principally treat to-day, but of those modest houses already built in which the majority of well to do citizens find their homes.

Much ornamentation in such a hall is impossible. The best thing to do where expense is not objected to, is to drop a couple of light Moorish archheads from the ceiling directly over and in a line with the foot of the staircase. They meet over the newel post and must be constructed of the same wood as that used in the finish of the hall.

Then drop a Mikado bead portiere from the hall arch head, which may be very simply carved—the shape imports more than the finish—permanently fastening it against the wall at the height of the newel post. In front of the fastening and contiguous to it place a small slender circular table, gilded if the hall be not well lighted, sustaining the inevitable and useful card receiver.

A thicker hanging may be used but the effect is then less happy, since the narrow portion of the hall shows as a half seen and dimly lighted vista, giving that appearance of space which is rather increased by the intervention of the portiere.

The treatment of walls and ceiling is entirely a matter of light and location. A house situated on the north side of a city street, and with that handsomest vestibule door of all—one of plain plate glass, beveled and uncolored—will allow a good deal of deep, dark color in the hall. A strawberry red, or a transparent carmine glaze over deep yellow, any color which is glorified by sunshine, may be here admissible. The dado may be rich dark reddish brown or bronze, either stippled or stenciled in geometrical figures or painted lincrusta walton. The ceiling may be cream or a warm gray, with a line of bronze lined without the wall color some six inches from the wall and an inch in width. The mouldings are also bronze with narrow lines of crimson.

This coloring, while very effective, is florid for a quiet taste. Suppose we use chocolate for such, with a canary yellow for the ceiling and dado. The chocolate is light or gray enough to allow stencilings of citrine color in the dado. They must be small in size and archaic, arabic or geometrical in figure, never in the remotest degree copying natural forms. The dado should not be more than eight or ten inches wide, and the figures should be edged or outlined with black. The citrine ought to reappear in the mouldings, and a line of dull orange brown, six inches from the wall, finishes the ceiling.

These old-fashioned stencilings with the painted wall upon which they are super-imposed are always more or less in vogue. This method of decoration, though costing a third more than a good quality of paper, is both durable and quaint, and will never entirely go out of style. Hand-finished work has a certain quality to recommend it which cultivated people are not slow to recognize. Besides, it can easily be kept free from dust and shows no joinings like wall paper.

Upon a wall of light reddish brown, in a dark hallway—one having a northern front, may be stenciled figures in three sizes, ranging from two to five inches in diameter. These may be of the color of *cafe au lait*. In the frieze reverse the order, using the reddish brown large figure of the stenciling alone upon the ground of the lighter tint. The ceiling ought to be lighter than the cone, scarcely more than a pale salmon, a color which gives a pleasant glow to the darkest corner.

Where paper is preferred to paint, it is desirable to use large figured yet unobtrusive designs, such as a canary yellow ground with conventionalized flowers of a slightly deeper tint, or deep crimson upon light, that is, shade upon shade. Two distinct colors in one small room serve to make it smaller still unless they are finely broken and mixed in the Persian style. Even then this kind of paper suits rather a bed room than an entrance way. Sand finished walls are, indeed, very suitable for a hall as well as a dining-room. In this case the stenciled frieze should be used, not paper. The cove-color should harmonize with that of the stenciling.

The richest finish of all are hangings of painted tapestry, but these are beyond the reach of moderate purses. In this manner the hallway of Geo. W. Childs, of Philadelphia, has lately been decorated.

It is a lofty room, some twelve feet wide. The door casings, base board and mouldings are made of native and foreign marbles, ranging in tint from black to yellow. From top to bottom the walls are covered with what appears to be Gobelin tapestry, at least to a cursory observer.

Instead of that it is skilfully executed painting on tapestry canvas, the subject a beautiful landscape which climbs the staircase, hillwise. Beyond the foreground of bosky dells and groups of forest trees are vistas of beauty. The whole makes an exceedingly rich, variegated and striking piece of decoration.

In the front of the newel-post of the grand staircase, in this same hall of Mr. Child's, is set in the dial plate of a handsome clock, also of marble like the post and railing. This staircase rises from a side hall at right angles to the main entrance. In it are some noble specimens of cloisonne enamel, which were brought from Japan by General Grant and by him presented to Mr. Childs. One of them, a huge vase, is the largest and finest to be found in this country.

To the top of a newel-post might easily be attached a quaint, large mouthed, low vase, suitable for holding ferns, a small palm or any other decorative plant. It might be changed from time to time, and would always serve to break the straight, stiff lines of the staircase. And if there is a landing, let a piece of rich Japanese embroidery or a Turkish rug be thrown over the balustrade, or hang a bit of rich color on the wall behind.—*Decorator and Furnisher.*

PERSONAL.

An award for distinguished merit has recently been made by Cornell University to Mr. W. N. Gibb, a former Upper Canada College student, for a thesis on "Library Architecture."

Mr. John Page, Chief Engineer of Dominion Canals, died very suddenly shortly after entering his office in the new Departmental Buildings, Ottawa, on the morning of the 2nd of July. Disease of the heart is said to have been the cause of his death. The news of the sad occurrence brought a sharp pang of sorrow to the hearts of many acquaintances throughout the Dominion whose high admiration he had won by his kindly disposition and sterling integrity of character. Mr. Page was born in Scotland on 9th August, 1815, and served first under the late Robert Stephenson as engineer of the northern lighthouse board. He came to the United States in 1838 and was engaged on the Erie canal until 1842, when he entered the service of the Canadian Government as resident engineer on the Welland canal. In September of the same year he was appointed resident engineer of the Junction and Williamsburg canals, which position he retained during 1850-52. He then filled the position of superintending engineer of canals below Kingston from 1852 to 1853. In 1863 he declined the deputy ministership of public works. On the 8th March, 1864, he was appointed chief engineer of public works of the provinces of Quebec and Ontario, and on 15th March chief engineer of public works of Canada. The survey for the Welland canal enlargement was commenced in 1870, and from 1872 to 1873 he was engaged in making reports on the enlargement of the canals from Lake Erie to Montreal. On the 10th December, 1873, he made a report on the proposed Baie Verte canal. On the 16th February, 1880, he presented a special and general report on the canals of the river St. Lawrence. He was chief engineer of canals from 1879 up to the time of his death, and altogether had been 47 years in the service of the Government. He was fourth president of the Canadian Society of Civil Engineers, being proposed for the present year. The funeral, which took place from the late residence of the deceased at Brockville, Ont., was attended by many men of prominence within the engineering profession as well as outside of it. It is a pleasure to learn that steps have already been taken to erect a monument to his memory.

MANUFACTURES AND MATERIALS

STRENTH OF LEAD PIPE.

MR. George L. Knox, of the Colwell Lead Company, in writing on the strength and durability of lead pipe, says:

"Lead pipe will sustain quite a heavy pressure if it is applied without shock, but in all practical work, in the plumbing of houses especially, the column of descending water suddenly stopped by the closing of a faucet exerts an increased pressure that will burst pipes which would stand a very much larger weight of still water. If the safe working pressure given in the table referred to were only slightly in error I would not think it necessary to call your attention to them; but my practical experience has shown that the figures there presented are very far from consistent with safe practice. Perhaps the best evidence to present in support of my views are instances that occurred in practical work.

When aerated bread was first made in this city we were asked to furnish a tin-lined lead pipe under two inches in diameter to stand a pressure of 140 pounds to the square inch, the pipe to be used for conveying the carbonic acid gas, which was forced through the dough after it was mixed. We furnished for the purpose AAA pipe, but it would not stand the pressure. We then made for them a heavier pipe, but with no better results. Finally, we made a pipe that was at least three times as strong as AAA pipe, but even this did not stand the 140 pounds pressure. Of course these pipes did not give out at once and the strongest lasted a few weeks, but eventually the lead swelled and burst. The parties for whom we furnished the pipe were finally obliged to use an iron pipe, tin-lined, the tin being necessary to prevent the corrosion of the iron by the carbonic acid gas. You will notice that the pressure was only 140 pounds to the square inch, and according to the table you printed the 'safe working pressure' of all the AAA pipes under three inches was considerably in excess of this figure."

GOOD TIMBER.

THE loud reports that our supply of good timber is fast being exhausted has naturally attracted science in that direction, the diagnose to quality produced in the great timber regions of the south. Professor Rankine says:

"There are certain appearances which are characteristic of strong and durable timber to what class soever it belongs.

1. In the same species of timber that specimen will in general be the strongest and most durable which has grown the slowest, as shown by the narrowness of the annual rings.

2. The cellular tissue, as seen in the medulary rays (when visible), should be hard and compact.

3. The vascular or fibrous tissues should adhere firmly together, and should show no wooliness at a freshly cut surface, nor should it clog the teeth of the saw with loose fibres.

4. If the wood is colored, darkness of color is in general a sign of strength and durability.

5. The freshly-cut surface of the wood should be firm and shining, and should have somewhat of a translucent appearance. A dull chalky appearance is a sign of bad timber.

6. In wood of a given species the heaviest specimens are in general the strongest and most lasting.

7. Among resinous woods, those which have less resin in their pores, and among non-resinous woods, those which have the least sap or gum in them, are in general the strongest and most lasting.

8. It is stated by some authors that in fir-wood that which has the most sap-wood, and in hardwood that which has the least, is the most durable—but the universality of the law is doubtful. Timber should be free from such blemishes as clefts or cracks radiating from the centre; 'cup-shakes' or cracks which particularly separate one annual layer from the other, V 'upsets,' where the fibres have been crippled by compression, V 'ringalls,' or wounds in a layer of the wood which have been covered and concealed by the growth of the subsequent layers over them.

The sub-committee of the Kingston city council appointed to consider the advisability of the city encouraging the establishing of cement works there, has reported that there is plenty of the material required for cement manufacture available. There is said to be marl at the bottom of every lake in the county of Frontenac, the whole of the bottom of Laboro lake, twenty miles long, being composed of it. A specimen of cement of satisfactory quality has been made from this material by Mr. Lenderoth, the promoter of the new enterprise. A Committee has been appointed to canvass the city for stock in the proposed works.

Not only are the natural colors of oak and mahogany, including the white variety, very extensively used, but with the partiality for light wood generally apparent, even a library, as in a recent decorative arrangement by a good architect, may be finished in sycamore free from stain. The method is not claimed as a novelty, considering that for centuries the Japanese and East Indians have done the same. Instead of elaborate molded work, a tendency is shown to have plain panels, rails and stiles, exposing as much as possible the nature of the wood. Whitewood is valued as a material to be finished in enamel, as is done in many rooms.

SMEAD SYSTEM.

Apparatus for Heating Great Buildings.

IT GROWS IN FAVOR.

In use in all parts of the Dominion.

TESTIMONY FROM MANY PLACES—FILLING A GREAT WANT IN THE PUBLIC SCHOOLS—AN IMPORTANT TORONTO INDUSTRY.

WITH the increasing size of Canadian towns and cities and with the growing importance of their leading institutions the question of how to heat and ventilate great public buildings has come more and more to the front as to how that must be settled. Especially is this the case with the schools of the country, for the rooms in these buildings are in use almost every day and almost continuously for at least six hours a day, and their occupants are those with whose lives and health we can least afford to trifle. Engineers and sanitarians have long been convinced that the two questions of heating and ventilation were in reality only the two phases of one question, and that to solve one rightly was to solve the other also. Judging by the favor with which it has been received, the system inaugerated by Mr. Smead, and developed and brought into practical use by the firm of Smead, Dowd & Co., answers satisfactorily the public demand in this regard. The firm established a Canadian agency some three years ago, with headquarters in Toronto, and in the short time since then the excellent work done has established for the firm a reputation equal to that it has already gained in the United States, where it stands unsurpassed, if not unrivalled. Mr. Dowd, one of the leading members of this great manufacturing house, gave to a reporter yesterday some facts concerning the apparatus and the extent to which it is in use.

"You understand," said Mr. Dowd, "that our system is adapted especially to the heating and ventilation of public buildings. We not only warm a room but ventilate it, changing the air in a school room, for instance, from six to eight times every hour. The importance of such a thing in relation to the health of children can hardly be exaggerated. One feature of our business that is very gratifying to us is that once our apparatus is tried in a town or by any section of the community and the need arises for a further order we always get the contract. Soon after we established our office in Canada in 1886 we got the contract for the Collegiate Institute in Chatham. When the question had to be decided how the new Chatham and Kent county building should be heated the contract was given to us. This building is a very large one, and is now just being completed. In 1887 the Montreal School Board sent a deputation to Toronto to investigate our system, and they were so well pleased with it that they actually cancelled a contract they had made for 3 hot water apparatus for Victoria School, then in course of construction, and gave us the contract for the heating system. Next year they placed our apparatus in the Royal Arthur School, taking out a hot water apparatus which had just been overhauled. Last year they introduced our system in the St. Jean Baptiste Ward School, and this year they are placing it in a new school in the Hochelaga Ward, and a few weeks ago they gave us the contract to take out the combined hot air and hot water heater in the Anne Street School and put in our own.

Ottawa is another city in which we have won success, which is most gratifying to us. The School Board sent a deputation to Toronto in 1887 to investigate this matter, and, as a result, our system was put in the Percy Street School. This was found to do such satisfactory work that in the following year they adopted it for the Central School West. The Collegiate Institute Board was convinced by the practical results of our work and gave us the contract to take out their steam heating plant and replace it with our system. In the same year the Separate School Board also gave us a contract for warming and ventilating three of the schools under their charge which had then just been completed. This year we have our third contract with the Public School Board to furnish the appliances for heating and ventilating a new school which is to be erected.

The Hamilton School Board, desiring to be informed upon this question, sent a deputation to Toronto in the spring of 1888 to investigate and report. They were so well pleased with what they learned of our system that they put it in the Picton Street School, and, as this practical test resulted satisfactorily, they called upon us to fit up in the same way the Wentworth Street School and the Ryerson School, two very large buildings. The Separate School Board showed their belief in the completeness of our system by ordering an apparatus for a large new school being built this summer.

The School Board of London, Ont., sent a deputation to the United States in 1887 to investigate the various systems of heating and ventilating in use. They adopted our system for the Hamilton Road School. In the following year they put our apparatus in the new Simcoe Street School, a very large building costing about $40,000. The work evidently gave satisfaction, for we were given the contract for the Collegiate Institute, which had decided to use our system instead of the hot-air furnace then in use. This year we have contracts from the School Board for the Waterloo North School and the Talbot Street School, and our system has been adopted for two other schools, the apparatus to be put in place this season.

Winnipeg made a trial of our plant last year in the Girls' Central School. The experiment resulted to their satisfaction as well as ours, for we were instructed to place the apparatus in three other schools. We have just received word that our system gives complete satisfaction in every respect. As the temperature last winter went as low as 45 degrees below zero, the test shows that our claim of being able to warm and ventilate a large building in extremely cold weather is fully justified.

In 1886, soon after we established our business in Canada, the Board of Education of Campbellford gave us a contract for the warming of the High School. Last year they built a new school and adopted our system for it. Peterboro' gave us a contract last year to place our system in two schools—the North Ward and the South Ward schools—and the reputation that this work has established for us is such that his Lordship Bishop O'Connor gave us the contract for heating a large girls school which is being constructed there this summer. The authorities in Halifax, N.S., have given the subject of warming and ventilating a great deal of consideration, and this week we have their signatures to a contract to place our heating and ventilating plant in a large fourteen-roomed school which is to be built this year.

Of course, our record in Toronto is well known. Our first work here was done in the Brock Avenue school in 1886, and was so satisfactory that we have had the contract for every new school since erected, and for replacing the systems formerly in use in many of the old schools. Our system is now in use in over thirty large public school buildings in this city. The Toronto School Board about a year ago sent a deputation to the United States to inquire into the subject of school architecture, including heating and ventilating. This deputation spent about six weeks in its mission, and visited twenty of the largest cities on the other side of the line. In making their report they concluded with these words:

"Your committee are unanimous in the opinion that in no one in all the schools visited did we find a system of heating and ventilation superior to the Smead & Co.'s, such as we have in our recently built schools, nor one equal to it in the facilities for the admission of large volumes of fresh air."

"In Windsor, two years ago, we placed our apparatus in the new High School that had just been completed there. This year we were instructed to provide the means for heating and ventilating three new schools which are now in course of construction.

The heating and ventilating of hospitals is a very difficult matter. Our system was adopted for the General Hospital in Brockville, and in the new Roman Catholic Hospital in Peterboro' where the work is about completed. The Protestant Hospital for the Insane in Montreal, a very large building costing over $200,000, also uses our system, and we have just been awarded the contract for the new Nicoll wing of the hospital at Kingston.

In churches we have done considerable work, especially in Toronto. We have our system in nine of the largest churches in the city, including the Trinity Methodist, Cooke's Presbyterian, College Street Baptist, Dovercourt Baptist, the Presbyterian church just completed on the corner of Bloor and Huron streets, the new Methodist church in Parkdale, which is to be opened on the 29th of this month and the Presbyterian church now being erected on Bloor street, to be occupied by the congregation of the old Charles street church.

We have done work in the Dominion from Regina in the Northwest Territories to Canso in Nova Scotia, and in no single case have we had any complaint, and, as I say, when a church board or board of trustees once use our system they take an interest in seeing it adopted for other buildings.

In the United States our system is extensively in use. Our apparatus exists in 50 school buildings in Washington city, in more than 20 school buildings in Columbus, Ohio, in every school building in Toledo, Ohio, and in 25 school buildings in Detroit. In the last named city the apparatus is now being placed in three large 16-roomed school buildings in course of construction.

The outlook for our business in Canada this season is better than it has ever been before. We flatter ourselves that we have added an important industry to the many industries of Toronto. We made over a million pounds of iron into castings last year in Canada alone, and the prospect is that this year the output will be considerably larger.

Our dry closet system, which is an important feature of our work, is held by sanitary experts to be better than any system of water closets, especially for use in public buildings. All danger to health is avoided, and there is no chance of any breakage or disarrangement of machinery such as occurs in systems now in use, causing great danger to the health of every occupant of the building."

RULES REGARDING CEMENT.

EMINENT engineers are authority for the following important conclusions:

Cold water is probably not injurious, only as it retards setting.

All cements when mixed with sand to a proper consistence for mortar will fall to pieces if placed in water before setting has commenced.

Any American cement of good quality will with one and one-half to two measures of sand give a mortar strong enough for most engineering purposes.

Pressure while setting, with the degree of thoroughness of the mixing or the gauging, the proportion of water used, and other considerations, may easily affect the results one hundred per cent. or even much more.

American cement requires less water than Portland.

Sand retards setting, so that cement which, by itself, would set in half an hour, may not do so for some days if mixed with sand.

When one part sand is added to one part of cement, the strength is less med one-half. Two parts of sand to one of cement, averages about one-third the strength of pure cement. These for tensile and transverse strains.

The crushing strength does not diminish so rapidly.

Slacked lime retards the setting of cement.

After using in air, cement, or cement with sand, should be kept moist or watered until completely hard.

Walls of buildings are often built of cement concrete deposited between smooth-faced planks as a mould, the planks being moved upwards as the work goes on. Cement should be nearly dry and tamped hard.

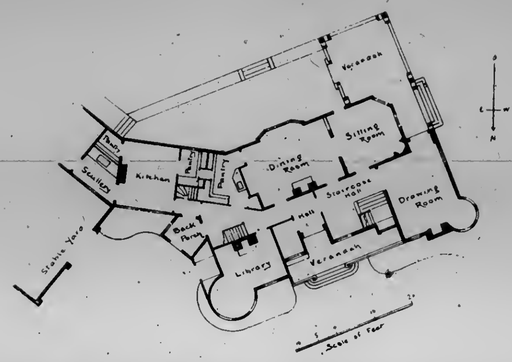
Post holes running down below frost and tamped full with concrete are safe and economical supports for warehouses and similar buildings.

Concrete may be used in large masses under water, and when properly put down, is found good for piers and shore protection.

Incorporation has been granted "The Ottawa Brick Manufacturing Co., limited." The company propose to manufacture and sell brick, including terra-cotta, pressed, ornamental and fire-brick, brick used for street paving or coping, also tile, pottery and other articles made from clay. The promoters are: Alexander Maclean, G. H. Perley, G. B. Greene, J. E. Askwith and H. C. Monk, Ottawa.

A very complete filling for open cracks in floors may be made by thoroughly soaking newspapers in paste made of one pound of ordinary flour, three quarts of water and about a table spoonful of alum; these ingredients to be thoroughly boiled and mixed, the final mixtures to be about as thick as putty, and it will then harden like papier mache, and may be used for moulds for various purposes.

A correspondent of the St. Croix *Courier* describes the new granite cutting factory of Epps, Dodds & Co. at St. Ceor8e, N. B. This is 115 feet long and 70 feet wide; the main building 40 feet wide and 25 feet high. On each side are two wings running its entire length, and 15 and 19 feet wide respectively. A main line of shafting carries to all parts of the building power obtained from a 100 horse power water wheel. This is probably used for polishing, the north wing being occupied by stonecutters. Upwards of fifty hands are employed, and the company pays an average of $500 per week in wages. One-third of the trade of this firm is with the United States, nearly all the remainder with Ontario.



SKETCH FOR RESIDENCE, ROSEDALE, TORONTO.

DARLING & CURRY, ARCHITECTS, TORONTO.

CANADIAN ARCHITECT AND BUILDER

FINE AND INDUSTRIAL ARTS · DECORATION · FURNISHING
CONSTRUCTION · SANITATION · ENGINEERING

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—THE—

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ARCHITECTS, CIVIL AND SANITARY ENGINEERS, PLUMBERS, DECORATORS, BUILDERS, CONTRACTORS, AND MANUFACTURERS OF AND DEALERS IN BUILDING MATERIALS AND APPLIANCES.

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TEMPLE BUILDING, MONTREAL.

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ADVERTISEMENTS.

Prices for advertising sent promptly on application. Orders for advertising should reach the office of publication not later than the 12th day of the month, and changes of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The Ontario Association of Architects has appointed the "Canadian Architect and Builder" its official paper.

The publisher of the "The Canadian Architect and Builder" desires to ensure the regular and prompt delivery of this journal to every subscriber, and requests that any cause of complaint in this particular be reported at once to the office of publication. Subscribers who may change their address should also give prompt notice of same, and in doing so, should give both the old and new address.

WE published a description some time ago of the alarming landslide at Quebec, and some doubt was expressed at the time as to with whom the responsibility should rest. The Dominion Government has given permission to claimants of damages to sue it for the amounts claimed, and no doubt some interesting actions will soon be fought out.

THE statement is made that the Provincial Natural Gas Company will not pipe St. Catharines before next spring, owing to the impossibility of securing pipe from the American factories, which are said to be crowded with orders. It would be interesting to know why this pipe is not being manufactured in Canada. Are Canadian manufactories unequal to its production, or have they also more work than they can do? Or, is the duty inadequate to afford the Canadian manufacturer a fair protection against the older and larger American factories? Whatever may be the cause, we hope to see this kind of work done at home in the future.

MR. Justice Proudfoot, in a case which came before the Toronto Courts recently, held that a mechanics' lien could not stand against a building belonging to a municipality. It would be a good thing for owners and reputable contractors if the Mechanics' Lien Act was removed from the statute book. The only persons who might have cause to complain would be the men who set up as contractors without money, and frequently with as little experience, relying upon the competition between the dealers in building materials to enable them to obtain the necessary credit. The loss of such men from the ranks of the builders would be a decided benefit rather than a calamity.

THE tyranny exercised by "organized labor" was well exemplified at Ottawa the other day. The despatch states that a certain contractor of that city agreed, at the dictation of the bricklayers' union, to dismiss the tuck pointers or foundation men he had employed on a certain building contract, but found that his agreement with the men precluded his dismissing them. Then the union called off all the bricklayers, and the contractor was unable to proceed with his contract. Finally, on paying a fine of $10, he was allowed to have the men back again. Such a method of extorting money would be worthy of the greatest brigand. At the same time, the contractor who meekly agrees to dismiss his employees who have been guilty of no offence at the dictation of the trades unions, is deserving of little sympathy.

A TORONTO property-owner awoke from sleep recently to find that the side of his house had fallen out as the result of an excavation on a neighbor's property having been carried too near to his foundation. He declares that but for the support afforded by an inside wall recently built in the cellar in connection with the furnace, the whole building must have gone down, burying him and his family in the ruins. The wall of a school building in course of erection collapsed a few weeks ago from the same cause. The gross stupidity and carelessness of some workmen is illustrated by the fact that an architect not long since discovered that a pier in the foundation of one of his buildings had been undermined by a drain having been cut beneath it. The building inspector might show that he is a living entity by making an example of persons guilty of such criminal carelessness.

THE terrible accidents that every now and then occur by the insecurity of platforms erected for sightseers, have been capped by one of the most horrible ever recorded, although in this case the platform was intended as a permanent structure, and gave way for want of that careful time to time inspection, the neglect of which should be made criminal. We refer to the collapse of the landing stage at Halifax, which upon the arrival of a ferry steamer was crowded with intending passengers, who moving to one side, caused the platform to tip up and the whole crowd of men, women and children to slide off into the water in a mass, the hindermost on top of the foremost. Such an occurrence *ought* to be a warning to the owners of all such platforms, and it behooves them to see that they are substantially built in the first place and well looked to afterwards, but unfortunately the element of cost comes in too often and the work is carried out without proper plans, without even the supervision of an engineer or architect, the owners trusting to the mechanic who puts in the lowest figure and intends to save as much as he can out of it for his own pocket.

THE Ontario Association of Architects desire to receive designs for an official seal. The sum of $10 will be awarded to the best design sent in as an acknowledgement on their part of their indebtedness to the designer. The seal is to be 2½" in diameter and to have the name of the association around the outer edge.

A LEADER in a recent issue of the Toronto *Evening Telegram* criticizes the architecture of buildings in the city and declares that such monstrosities would never be "tolerated in the United States." No doubt there may be some remarkably ugly buildings in all cities of Canada, but we certainly were not aware that "artistic culture" in the States had attained so high a degree that ugly buildings were not permitted to be put up. We are afraid we in Canada must be a long way behind the times if this is the case, for as yet we are hardly able to prevent the construction of fire traps and booby traps—and certainly to build safely must be learnt before we can enforce building with beauty. And then, too, we must find out what constitutes beauty in a building, for the list of buildings given by the writer that do possess "grace of outline and cultivated finish" takes us over a wide field of design and leaves us in doubt as to which particular building ought to be set up as the standard of beauty.

SEVERAL hundred thousand dollars have been expended by the Dominion Government and the city of Toronto on the construction of the breakwater at the south-east boundary of the Island, with the object of preserving intact the magnificent harbor. This expenditure will be entirely wasted if steps are not speedily taken to complete the work by extending the protective wall along the entire southern and western boundaries. The narrow strip of land comprising the island is rapidly diminishing in extent before the action of wind and wave, and its entire disappearance may be looked for within a comparatively brief period if the necessary protection is not afforded it. This would prove one of the greatest calamities that could possibly befall the city, and the stupidity of those who were responsible for it, would excite the indignation of all future generations. It is to be hoped united action will be taken by the Government and city authorities to continue the construction of the breakwater during the coming winter.

ALTHOUGH we believe that the gift of High Park to the city of Toronto should be acknowledged by the erection of a monument to the late Mr. Howard, we cannot regret the defeat of the $10,000 by-law for that purpose. If the money had been voted it would have been worse than wasted, except that it would have acknowledged the indebtedness of the citizens of Toronto to the man who so generously provided the city with so magnificent a park. A monument would to a certainty have been erected which, while it might meet with the approval of the general public, would have been held in contempt by the better informed. A bad statue is worse than no statue, and if we cannot have good work, let us at least not have work of which we may be ashamed in the near future. One Ryerson monument is sufficient in Toronto, and until we can obtain statues of real merit let us do without them. The munificence of the late Mr. Howard can be much better acknowledged and kept before the citizens of Toronto by the erection of a building which can be put to a useful purpose. Let the building be of fine design and thoroughly and substantially built, and it will be a worthy monument to a man who was the first architect which the city of Toronto possessed. A bronze or marble bust of Mr. Howard could be placed in a prominent position in the building, with a tablet giving particulars of his gift to the city.

A WINNIPEG insurance agent has published a scheme for the better protection from fire of small towns that are usually built of wood. It is simply the introduction into these places of occasional fire-walls, which shall divide blocks of houses. With such an arrangement there would no doubt be a slight diminution in the possible spread of fire, but unless the streets were widened considerably or a fire wall carried down the centre to prevent the flames from reaching across the streets, there is nothing here to hinder the spread in this direction. And then, how about sparks which will fly over fire walls and ignite distant structures? We are afraid the only actual protection for wooden towns would be to enclose sections in fire wall all round and put a fireproof roof on top of the walls over the whole area enclosed. The cost of this would probably be greater than building the towns of bricks. But while on this subject our attention has been called to the rows and rows of houses built in every city, even those that have a so-called fire by-law, without a brick wall between each house and its neighbor. We know of rows containing as many as twelve houses built with a gable wall of brick at each end and a face of half brickwork to the front: all the rest is frame with rough-cast back. If a fire does start in one of these, there is nothing whatever to hinder the destruction of the whole row in a fearfully short space of time, and the farce of framing by-laws to prevent the spread of fire goes on, without a proper enforcement of such clauses, even if any practical clauses happen to exist at all.

IN response to repeated requisitions Hamilton has now a regular system of granting building permits and keeping a record of all new buildings, but we notice one point in the form of permit that we think is hardly advisable. It is that the name of the contractor who is to do the work appears on the permit. This means that a tender has been accepted even if a contract has not actually been signed, before the permit was given or the plan examined to ascertain if it was in accordance with the requirements of the by-law. In nine cases out of ten where the plans have been prepared by competent men, no change would have to be made, but in the event of changes, possibly sweeping ones, having to be made, there might arise a great deal of trouble between the contracting parties, for which the architect would be solely responsible. It is a question for architects to decide whether it is advisable to let a contract before the permit is given, but we think it is always wisest to be on the safe side. As an example, take an instance where a contract has been let and the owner does not intend to spend more on his house, or it may be a public body for whom the work is to be done, who cannot spend more without recourse to further loans. The Inspector insists on the addition of a brick wall somewhere in the centre as a requirement of the by-law against fire. The contract having been let, the contractor is asked to give a price for this addition, and if he is not a scrupulous man, will "pile it on" and perhaps in the end put the owner to the expense of arbitration, and naturally the blame of all this must rest on the architect.

MANY of the old macadam roadways of Montreal are to be taken up and relaid with modern paving materials, some in wood, some with granite "setts" and others again with asphalt. The somewhat hot-headed discussions that have taken place on the subject at the City Council meetings show, that many of the aldermen do not possess quite as practical a knowledge of the methods of constructing pavings and the dealings with contracts as it would be advisable they should. A number of aldermen advocate the construction of these roadways under day-work system instead of contract work, simply because they think a considerable saving would be made in public funds by this means. The question they are discussing is one of *permanent* roadways, and the very best method of securing a *permanent* result is to insist upon a valuable guarantee from the contractor. By day-work no guarantee can be given, and unless the supervision by the City Surveyor is constant and minute—such as would take up all his time—unless the city undertakes to test the materials to be used and procures the services of engineers who are thoroughly acquainted with this kind of work, the result will never be a success. And if in order to make it a success the city incurred such expenses as these, the cost would far exceed the amount of the contracts. By contract one man is made responsible, and this system of doing work must prove far more satisfactory to the public who wish for a tangible proof that their money is not being thrown away. It is not a question of the cost; the result must be as near perfection as it is possible to go, or it is of no use doing the work at all.

THE city of Toronto claims to have a building by-law, but it certainly is not observed. The by-law is of a character that appears to encourage the building of dangerous structures in closely built localities and will not allow of perfectly safe construction in the thinly built residential portions of the city. The *Globe* Company have been allowed under the by-law to practically build two stories of wood on the top of a four or five storey brick building. These two stories have been allowed to be erected because a wooden wall, instead of being built up plumb, has been given a slope and called a roof. The by-law would not allow of the same amount of wood being erected vertically or plumb, because it would then be a wooden erection and dangerous; but when it is given a slope and called a roof it does not infringe the by-law, and is perfectly safe. Moreover, this sloping wall or roof is covered with slate, which would, in case the top of the building caught fire, be immediately loosened and allowed to slide off into the street, rendering it utterly impossible for firemen to work anywhere near the building. Sloping roofs of slate or tile secured to wood should not be allowed to be erected on high buildings in the closely built portions of the city. Here we have an immense amount of wood placed at a height so great that it would be impossible to get a stream of water of any strength to play upon it. The by-law allows this; but at the same time does not allow of the same amount of wood being placed in a similar structure built upon the ground in a thinly built portion of the city. Again, the fire by-law has allowed of the erection at the corner of Yonge and Gerrard streets, of a building which is freely characterized as a fire trap of the worst possible description. If a fire once gets headway in any portion of the building the entire structure is doomed. While as stated it is possible to erect these dangerous structures in the business parts of the city, it is not permissible to erect within several hundred feet of any building a house with tile hung walls perfectly safe from fire except from the inside. It is also possible to erect rows of houses with wooden party walls, or with 4½" brick walls carried up two or three stories and carrying the floors. The writer has seen these walls most carefully propped up during the course of their erection for fear the night breezes might blow them over, or the mischievous boy push them down. In Queen street west there was erected some years ago a brick veneered store, which some few weeks ago suddenly assumed a position slightly out of the vertical. To prevent any further trouble, the space between this building and a brick building to the west was filled in with a structure of the same character as the one which required support. Here we have allowed the erection of a brick veneered building in a business street, hemmed in on every side with buildings of a like character. The needs of this city require that a building by-law be immediately prepared which will prevent the erection of dangerous structures, either through their inflammable character or because of their inferior construction. We have a sufficient number of buildings representing both kinds, a few of which are among our most important structures.

FIRE-PROOFING AND ITS ADVANTAGES.

FIRE-PROOFING has now become one of the most important branches of the modern building trade, and as such, is entitled to most serious attention from our architects, engineers and builders, as well as from owners and tenants of large buildings who have considerable interests at stake.

For some unknown reason people do not attach any great degree of confidence to fire-proofing; they claim that it will not prevent a building from burning. This impression is entirely erroneous; fire-proofing, when properly carried out, will make a building so far fire-proof that by closing the doors of any one room, the fire may be confined entirely to the furniture and other combustible material contained in it. This has been proved by repeated experiments. Insurance companies are fully alive to this fact, and they are generally ready to reduce their rates considerably for buildings protected in this manner.

When compared to the loss through total destruction by fire of an expensive modern building, the cost of fire-proofing it is ridiculously small. The fire at the University which totally destroyed this valuable building a few months ago, is a striking example of the truth of this statement. In this case, fire-proofing might not have prevented the ignition of the staircase when the fire started, but it would certainly have prevented the fire from going rapidly through partition after partition as it did. What would the cost of fire-proofing this building have been as compared to the total loss of the numerous records, curiosities, books and other valuables contained in it? let alone the building itself, which was a credit not only to the city and to Canada, but to the whole continent.

Some short-sighted members of the Court House Committee are opposed to the expense of fire-proofing this *expensive* structure. What would the "expense" be if the building burned down two months after its completion, and what would the advantage be in having had it insured for its full value? The building will cost in the neighborhood of $1,000,000, and the cost of covering this with insurance will be enormous. Should the building be fire-proofed, the amount of insurance and the rate on it can be reduced to such an extent that the saving in premium alone would pay for the fire-proofing in a few years; and even were this not the case, the expense of fire-proofing is as nothing compared with the loss in case of total destruction. To say that it would cost $200,000 to fire-proof such a building, (as one of the members of the Committee is reported to have said) is believed to be rank absurdity.

There are two ways in which fire is most easily communicated in a burning building: 1st, by the total destruction of the floor or partition between any two adjoining rooms; 2nd, by the overheating of the floor or partition. This overheating causes the woodwork, the paints, varnishes, etc., to exhale a quantity of combustible vapors and gases in the room where there is as yet no fire, and as soon as the flames reach them these gases are ignited with such rapidity that they carry fire to every part of the room at once.

Fire can scarcely be communicated in this second way when fireproofing tile is used. This tile is such that although there may be a raging fire on one side of the floor or partition, the other side is comparatively cool. The Rathbun Co., of Deseronto, the United States Fireclay Co., of Pittsburgh, and the Pioneer Fire Proof Co., of Chicago, all manufacture tiles of this description.

Now, as the tiles will not burn, the only way in which the fire can get through is by the floor or partition warping and falling out of its place. This, however, should not occur, as the tile are burnt at such high temperatures in the kilns that no ordinary heat can warp them. Fireclay tiles are now being manufactured of such dimensions and strength that they can be used in the body of the outside walls and partitions without the help of brick or stone, thereby saving the cost of fireproofing brick or stone walls after they are built. Several buildings of as many as six or seven stories high are now in existence in Chicago and elsewhere, and have proved to be an entire success. The blocks of fireclay are extremely ornamental and can be made to any shape required.

All these are facts which should be taken into serious consideration by our architects, the Court House, the Home Savings and Loan Co., the Confederation Life, the proposed athletic association building, and many others being well worthy of such protection as fireproofing can afford.

Apart from the protection against fire, this material, considered from a sanitary point of view, presents a great many advantages too numerous to be fully considered now.

We learn from the Halifax *Chronicle* that there is a small Episcopal wooden church at Auburn Station, King's county, which is said to be one hundred years old this summer, and the congregation worshipping there are talking of celebrating its centennial. As far as can be ascertained, the clapboards on the sides and the shingles on the roof are the ones put there when the edifice was built and they are sound yet. The shingles were originally three-quarters of an inch thick, but have gradually worn away until now they are scarcely thicker than the blade of a knife.

FIRST MEETING OF THE EXECUTIVE COUNCIL OF THE ONTARIO ASSOCIATION OF ARCHITECTS.

IN accordance with the Act incorporating the Ontario Association of Architects passed during the last session of the Ontario Legislative Assembly, the Lieut.-Governor-in-Council gazetted the Council on the 26th day of July last. The following architects were gazetted, viz: Messrs. W. G. Storm, D. B. Dick and F. J. Rastrick for a term of three years; Messrs. Edmund Burke, W. Edwards and King Arnoldi for a term of two years, and Messrs. David Ewart, Wm. Blackwell and S. G. Curry for a term of one year.

The Council met on the 5th of August at 10 a.m. in the rooms of the Toronto Architectural Sketch Club, Toronto, all of the members being present.

The proclamation in the *Ontario Gazette* appointing the Council was read, and it was determined to organize according to the said proclamation.

In response to the expressed wish of the meeting, Mr. Storm presided over the proceedings and Mr. Curry acted as Secretary.

It was determined that the first business to be taken up should be the approving of the officers named in the Act of Incorporation, when the following were elected to the positions:

Moved by Mr. Arnoldi, seconded by Mr. Edwards, that Mr. Storm be the President of the Council. Carried.

Moved by Mr. Burke, seconded by Mr. Dick, that Mr. Arnoldi be the first Vice-President. Carried.

Moved by Mr. Burke, seconded by Mr. Edwards, that Mr. Rastrick, of Hamilton, be the second Vice-President. Carried.

Moved by Mr. Arnoldi, seconded by Mr. Ewart, that Mr. Townsend be appointed Registrar, salary to be fixed later on. Carried.

Moved by Mr. Ewart, seconded by Mr. Edwards, that Mr. Dick be appointed Treasurer. Carried.

Moved by Mr. Rastrick, seconded by Mr. Ewart, that Mr. J. W. Curry be appointed Solicitor. Carried.

Moved by Mr. Ewart, seconded by Mr. Arnoldi, that Messrs. Curry, Burke, Dick and Storm be appointed a Committee to prepare by-laws, the Committee to send copies of proposed by-laws to all members of the Council for their consideration and suggestion before reporting to the Council; the Committee to report at the next meeting of the Council. Carried.

Moved by Mr. Curry, seconded by Mr. Rastrick, that in pursuance of sub-section 3 of section 20 of chapter 41 of 53 Victoria, the admission fees payable by architects on enrollment, including the first year's dues, shall be fifteen dollars; that the admission fee for students under sub-section 2 of section 24, shall be one dollar, and that for students admitted under sub-section 1 of section 24, shall be five dollars, and that this resolution be afterwards embodied in the by-laws of this Association. Carried.

Moved by Mr. Burke, seconded by Mr. Rastrick, that a notice to register be placed in the *Ontario Gazette* and CANADIAN ARCHITECT AND BUILDER, and that a copy of application to register be sent to every architect whose address may become known to the Registrar, the necessary details to be arranged by the Solicitor and Registrar. Carried.

Moved by Mr. Edwards, seconded by Mr. Ewart, that Messrs. Storm, Dick, Burke and Curry be the Executive and Finance Committee, who shall have charge of all matters connected with finance. Carried.

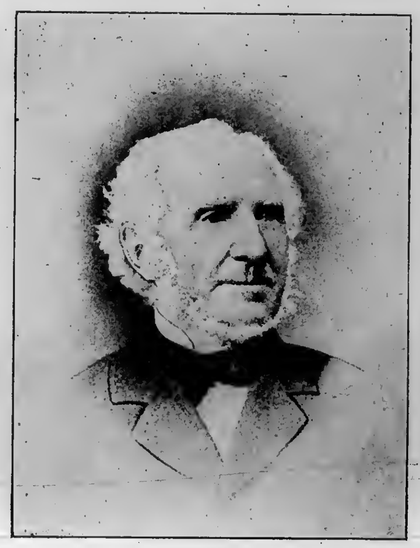
Moved by Mr. Curry, seconded by Mr. Dick, that Messrs. Ewart and Arnoldi be appointed an Education Committee to take up the question of the standard of knowledge to be required of students at the preliminary, intermediate and final examinations, and report at next meeting. Carried.

Moved by Mr. Curry, seconded by Mr. Edwards, that $10 be offered for the best design for a seal, to be cut on a 2½ inch die, for the Association.

Moved by Mr. Curry, seconded by Mr. Arnoldi, that the first annual meeting of this Association be held on the third Wednesday in February, 1891, or at such other day in February as may be decided by the Council. Carried.

Moved by Mr. Blackburn, seconded by Mr. Burke, that the thanks of the Council of the Ontario Association of Architects be tendered to the Toronto Architectural Sketch Club for the use of their room for the first meeting of this Council. Carried.

The meeting adjourned.



THE LATE JOHN PAGE, CHIEF ENGINEER DOMINION CANALS, BROCKVILLE, ONT.

The above is a formal record of the business transacted by the Council. It does not, however, represent the work actually accomplished, as many matters were discussed in an informal manner with the object of placing the members in a position to give more attention to business which will be brought up at the next meeting of the Council. The Council sat all day and spent very little time in useless discussion. The Council thought it would be better for the first year to combine the registration and annual fees in one fee. The fee was placed as low as possible, but at the same time at a sufficient sum to meet all expenses. The Association has to provide for the payment of about $125 in obtaining the Act and the cost of administration, examinations and sundry other expenses, and also the accumulation of a fund to be devoted to the education of students and draughtsmen. No accurate estimate can be made of the number of architects who will register.

OUR ILLUSTRATIONS.

FOURTH PREMIATED DESIGN CONFEDERATION LIFE ASSOCIATION BUILDING, TORONTO—ALFRED FLOCKTON, ARCHITECT, MONTREAL.

DESIGNS AWARDED FIRST POSITION IN "CANADIAN ARCHITECT AND BUILDER" COMPETITIONS FOR "FRONT AND VESTIBULE DOORS" AND "WOOD AND BRICK MANTELS."

PUBLICATIONS.

The business hitherto carried on by the Dominion Illustrated Publishing Company (limited), has been purchased and will be continued by the Sabiston Lithographic and Publishing Company, of which Mr. Richard White is President and Mr. Alex. Sabiston is Managing-Director. It is hoped to add to the interest and value of the paper, both from a pictorial and literary standpoint, and to extend and improve the business in its various departments. The business will be carried on in the meantime at the old premises, 73 St. James Street, Montreal, under the management of Mr. J. P. Edwards, to whom all communications in connection with accounts due the old company and new business should be addressed.

MONTREAL.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

THE Canadian Society of Civil Engineers have moved into their new rooms situated in the Bank of Montreal's western branch building, at the corner of St. Catharine and Mansfield streets. The large room will be used as a library and general meeting room of the society, while the smaller room facing St. Catharine street will be the Secretary's office, where the council will meet.

BOARD OF TRADE BUILDING.

The Board of Trade of the city of Montreal having acquired a site acceptable to all, have now under consideration the advisability of having their plans prepared. The president and secretary have recently made a tour through the States examining the various Boards of Trade buildings and have returned to the city fully convinced that no Canadian architect will be found fit to erect their building. They have interviewed several American architects who have promised to submit plans. It is rather rough on Canadian architects to see the president and secretary of an influential body scouring American towns and interviewing American architects regarding plans for a comparatively insignificent building. Surely the Dominion of Canada—if not the city of Montreal—contains architects well qualified to erect a building equal if not superior to any produced by American architects, especially if they are not handicapped by lack of money and other considerations. I suppose the Board of Trade would hardly consider it fashionable to employ purely local architects while other large corporations import theirs from the States.

The Board of Trade have now an opportunity of showing a patriotic spirit by opening their competition for their new building to Canadian architects only; following the example set them by the Sun Life Insurance Company. This would give our architects some stimulus to enter into the competition. I will have more to say on this subject as matters develop.

QUEBEC ARCHITECTS' ASSOCIATION.

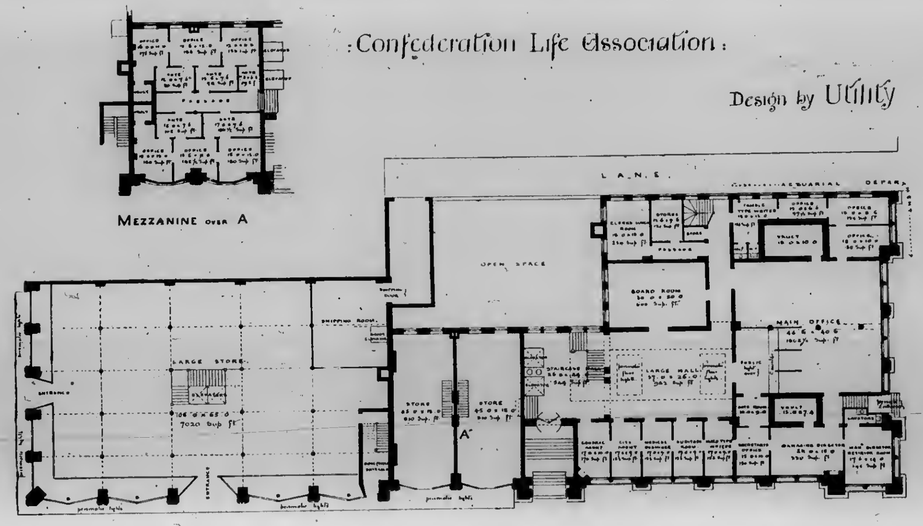
Articles and by-laws have been drafted by the committee of organization to submit to the general meeting to be held early in September. Copies have been forwarded to the local association of architects of Quebec for acceptance.

ANOTHER SPECIMEN OF "ARCHITECTURAL COMPETITIONS."

Montreal architects are expressing their indignation at what they regard as the "check" displayed by the President and Secretary of the Fortress Hotel Co., of Quebec, in addressing to them a circular which reads as follows: "Tenders will be received up to 15th of September next, for plans and specifications for a new hotel at Quebec. Parties wishing to compete will require to visit the ground owing to its exceptional position. A prize of $1,000 is offered for the best plan. Further information can be had from the Secretary. A reply, stating whether you intend to compete or not, will greatly oblige.

"CONDITIONS—1st.—Total cost (heating, plumbing and lighting included) not to exceed $175,000; 2nd.—To contain at least 200 bed-rooms; 3rd.—The majority of the Directors will decide which plan is entitled to the $1,000."

The Fortress Hotel Co. have much to learn about the conditions which should govern architectural competitions and the cost of building construction. Let silence be the universal response to the above circular.



WARPING OF WOOD.

AS lumber is now sawn, every board but one will warp and curl up in the process of seasoning. The reason for this is plain. If the board be sawn from the side of a log, the grain rings of the wood lie in circles, which have a greater length on one than upon the other side of the board. A board cut from the very centre of the log has grain circles of equal length upon each side, and will lie perfectly flat when seasoned.

When selecting the lumber for a tool-chest or some other fine job, pick out boards which show that they came, as near as possible, from the centre of the log. A method is in use which compensates for this tendency to curl in seasoning. This is known as quarter sawing, and quartered oak, of which so much is said at present, is sawn by this process.

It consists in cutting out boards radially from the centre to the outside of the log. Suppose a log to be split into four pieces, each of these pieces is sawn diagonally so that the grain rings run through, instead of the circles running into, part way through and out upon the same side of the board.

Quarter sawn lumber will not warp in drying, neither will it yield so readily to changes of weather. It has the disadvantage of being more expensive, as in sawing each quarter a narrow board is first taken off, then one a little wider. The boards increase in width until the middle of the quarter is reached, making the widest board equal to half the diameter of the tree. The narrow boards may be glued up into wide strips, but that shows considerable sap, and they cannot be used in some kinds of work.

To prove that the circles of sap rings cause curling during the seasoning process, it is only necessary to take such curled boards and wet the concave side, or apply heat to the convex side. If each or both be done, the boards will straighten out forthwith. This method is often taken advantage of by carpenters, in working twisted or warped boards. The seasoning process is also controlled by frequently turning boards over so that each side may receive just enough heat and air to keep the boards flat.—*Woodworker.*

PERSONAL.

Mr. W. R. Gregg, a highly esteemed member of the architectural profession in Toronto, was united in marriage a few days ago to Miss Grace Angus, of Montreal, and will spend the honeymoon in Europe.

The City Engineer of Toronto has taken upon himself the responsibility of appointing a third plumbing inspector. If the three inspectors conscientiously strive to fulfil their duties, they are not likely to find themselves with much idle time on their hands.

Mr. J. C. Merriwater, of Greenwich, England, proposes a combination of lead with paving materials to prevent slipping. One plan is to place lead plugs or strips at or in the joints of paving blocks; preferably at the intersection of cross and longitudinal joints, and another is to use the same device in coalhole or manhole covers, the theory being that "lead is sluggish and bites."

ENGINEERING AND ARCHITECTURE.

BUT these suggestions bring uppermost once more a much debated question, and that is the relative importance of the two professions of engineering and architecture in the design of any great work. The scheme to build a 28 storey building, and the construction of an Eiffel tower, are works in which the engineer takes a special delight, but they are a style of construction which the architectural examples of past ages cannot parallel, even in the very interesting catalogue of circumstances and result provided in the paper which Mr. Behrendt recently read before the Victoria Institute of Architects. The Eiffel tower is scarcely "a thing of beauty," and the 28 storey house of the future is unlikely to provide a better field to the architect for delighting the eye than do the new tall buildings in these Australian cities. The scheme seems rather to open up a new field for engineering science, in construction and sanitary arrangements, and in a still further development of that branch of it which has devoted itself to the speedy and easy conveyance of passengers from floor to floor. We have had a very interesting discussion carried on in these columns under the heading of "Friends in Council," in which the division of duties between the engineer and the architect has been much debated, and there is an increasing number of enlightened minds who are accepting the views, that, in these days of rapid progress in, and fresh developments of the scientific arts, specialists will more and more command a leading position in them; that the vast strides being made demand too much attention for one mind to successfully grasp and practice them all, and that great architectural undertakings need the work of a specialist in engineering to overcome the dangers of constructive defects. On the other hand, there are not a few who dissent from these views, and no doubt many mistakes which do occur are the result of an unsettled practice and of much friction between professional men who see only dangerous competition in the introduction of the specialist's advice, for Sir Gilbert Scott's view, that architecture results in the first instance from necessity, beauty being a superadded grace, chimes in harmoniously with the paper on "Origin and Development of Styles," which appeared in our last issue, and this view emphasizes a point which has lately been receiving a good deal of attention, viz., that in the training of architects, the scientific or constructive studies should receive much more attention than has been devoted to them. Here again, aptly apply our remarks upon fireproof construction in theatre buildings, where the simple adaption of many well-tried appliances would, under the master mind, speedily provide the fireproof building. The crowding in larger cities, which is such a characteristic of the history of the last fifty years in all parts of the world, imperatively demands that our scientific professions should keep pace with the requirements of the times in this respect in constructing hotels, theatres, and all large public buildings, and it clearly emphasizes the view that the practical and useful in architecture is its most important feature, while its ornamental and decorative work should be the outcome of refined taste sufficiently controlled to yield no sacrifice excepting to strictly utilitarian principles. The specialist in sanitary matters, or in the acoustic properties of a building, is finding today full occupation for all his energies; the decorative artist has recently had opened to him fresh fields for his special proclivities, and the constructive art in the more modern building is rapidly assuming a phase which demands that the training of an architect should be on a much higher plane, and his admission to practice controlled by much stricter laws than have prevailed among us hitherto. The question of a University training and a University certificate has been fully discussed in these columns, and the Victorian Institute has led the van in asking Parliament to appoint a professor of architecture in the local University. These are questions which are engaging much attention in other places than the Australian colonies, and it is desirable they should be fully discussed here, but that that discussion should be so widely published that the public will become interested and assist by their "silent vote" in effecting a radical change in the existing state of affairs. Only recently a case was heard before a colonial court in which heavy damages were awarded against a so-called architect for faults in construction, which led to the subsequent very serious injury of the shops, and in the newer style of building in which ground space and value compels the addition of many stories in the height, it is imperative in the public interest that highly skilled professional advice should be secured as a preventative to disasters, which may be even more startling than the destruction by fire of a flimsily-constructed theatre building. Sydney, N. S. W., *Building and Engineering Journal.*

STEREOTOMY.

By John A. Pearson.

TO WORK A MOULDED ARCH STONE.

Fig. 1 represents an arch stone.

Fig. 2 is the moulded portion of the arch stone, made twice the size of figure 1.

Having worked the face A B, the top portion A being cleaned and drafts run along the joints and arris of the intrados to save labour, scribe upon this face the face mould with the radiating joints and soffit. Work the

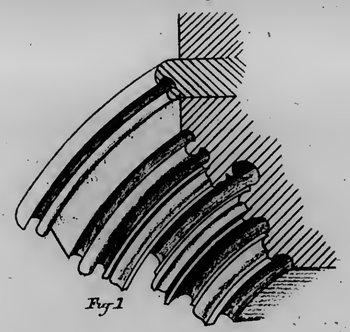
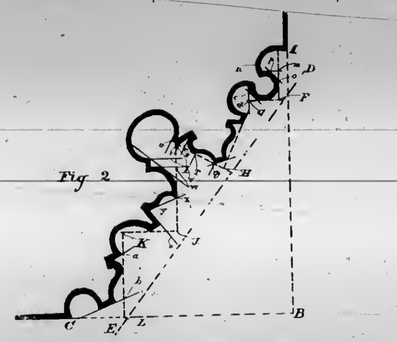


Fig 1

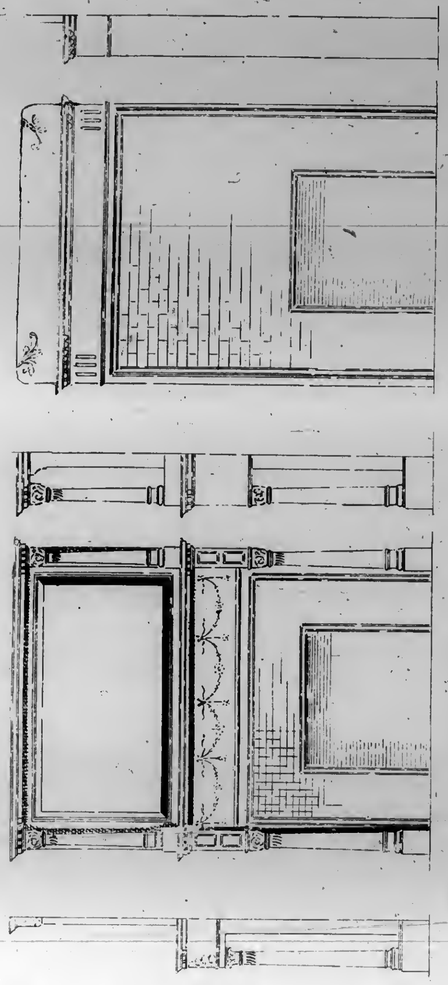
soffit square with the face and clean from E C backwards. Knock off the rough stone in D B E to the plane D E. Mark the mould on the joints of the stone, then mark the outer lines A F G H I J K L and convey the lines till they intersect the plane D E. Work these different faces through the whole length of the stone. The different sweeps may be obtained from reverses made from the corresponding lines on the face mould.

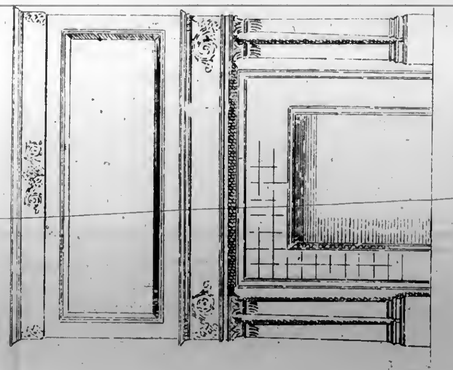
To work the head roll member, the faces, trammel the line *m* from the arris F and sink the scotia to the depth *n* with a little moveable square or

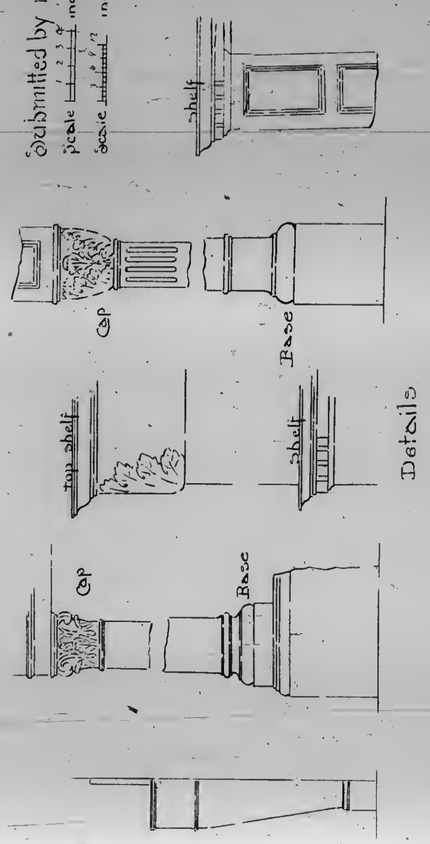


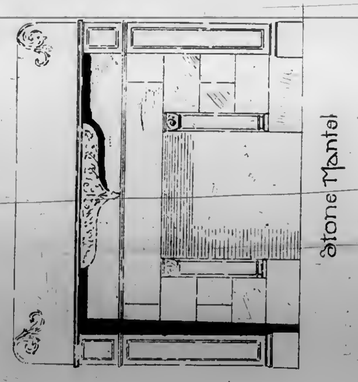
shiftstock, then work the scotia through. We have now *m* F and E G already worked. Trammel the line O with the distance O F from the arris F and the line *p* with the distance *m p* from the arris *m*. Work this plane through, then work off the little angles formed between the faces, the face *o l* is worked similarly. To work the mould on the face H I, trammel the point *q r s t u* from the arris H, the entire length of the stone, run the core *r q* and the quirk *s t* to their different contour taken from the mould scribed on the joint. Then the point V W and X may be trammelled from the arris J and sunk to their different depths.

The face *z y* and *x y* may be trammelled from J and cut into their required shape, and the points a b may be tramelled from L on the face L K. When deep cores occur as in *a u* they should be sunk to the depth first and cleaned right through rough being left on the arrises S and U to prevent them from being abraised or snipped. All the other points of the different members of the mould may be easily obtained from the face given.

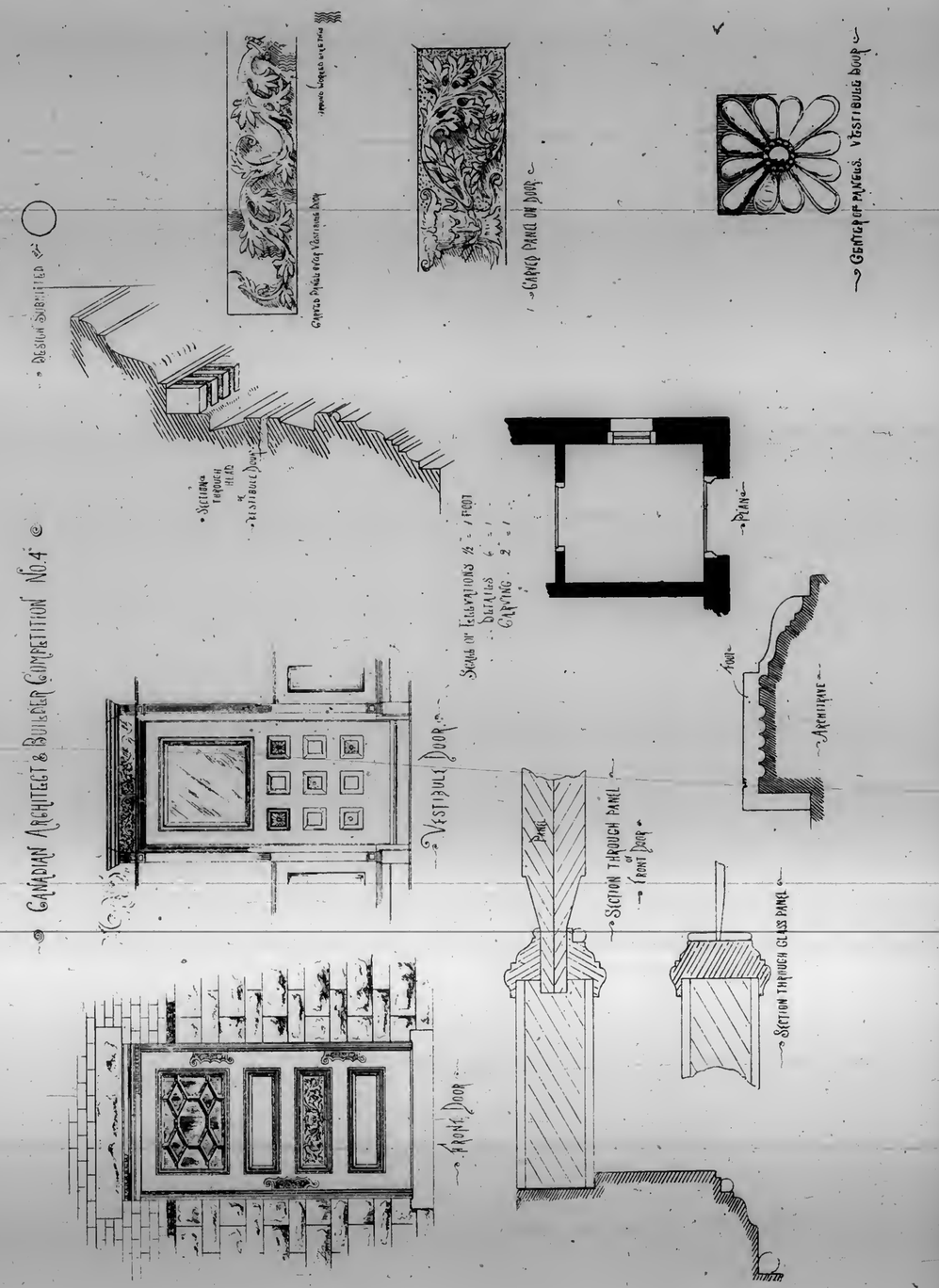








"CANADIAN ARCHITECT AND BUILDER" COMPETITION FOR WOOD AND BRICK MANTELS.
DESIGN AWARDED FIRST POSITION, BY "1890."



DECORATION AND FURNITURE

THE ARTISTIC IN ELECTRICAL WORK.

ELECTRICITY, says Kuhlow's German *Trade Review*, has been the means of creating a variety of new and beautiful illuminating bodies. A completely new ornamental principle has been brought into application. The ductile conducting wire can be turned and wound in all directions, so that the most fantastic formations are possible. Thus, there may be fitted in the corners and centres of ceilings, garlands and floral ornaments in colored bronze or in gilded and painted stucco, from the open flowers of which streams the electric light, or to such garlands colored glass lamps to contain the lights are added, by which the effect of colored precious stones is produced. The light hangs down in glowing clusters, or swings from the walls in festoons of flowers, or glitters in the hands of charming bronze boys, or like a galaxy of stars it hovers above that magnificent life-size female form, cast in bronze, from Eberlein's model. Free and unrestricted can the light be disposed of. Small wonder that the naturalistic creations receive the preference! The things at present created in such illuminating bodies are really magnificent. Here, a wall bracket in the form of a pineapple, on the crown of which are the lamps, like stamens with glittering nodes. There, a lamp of colored majolica with the rays of light glimmering with fairy-like beauty between colored metallic leaves and entwining plants. Countless is the variety, each more beautiful than the other. All the large establishments for illuminating articles hold similar charming work in stock. In numerous places of public assembly in the city many have already come into application. The impression created is of such an enchanting character, that it may with justice be claimed that in this wonder of loveliness the marvels depicted in the "Thousand and One Nights" seem again to be realized. In this beautiful work there is a hint for our artistic trades: new ornamental creations are not originated by the everlasting imitation of the ornamental forms of past periods of style, but by inventive skill and new necessities.

"ART EDUCATION."*

ALL children should be taught enough drawing to be able to express themselves readily with the pencil. Not with the purpose of making artists of them, but because such power is an enrichment of ordinary daily life. This study awakens an appreciation for beauty and truth and leads to higher ideals in conduct and workmanship. There is a yearning toward beauty in form and color as well as in sound and morals, and it is to this upward tendency of the mind that the wise educator will address himself. The higher our conception of material beauty, the higher will be our conception of moral beauty.

We, as a nation of peace, maintaining the smallest standing army in the world, in our public education are doing nothing compared with Europe to advance and ennoble peaceful occupations. What is being done by America toward fitting the people for adjustment of their relations to peaceful labor is being done wholly by private enterprise. Pratt Institute in Brooklyn, whose varied work is illustrated so beautifully in our city to-day, is maintained wholly by private enterprise and is training 1,500 young people to self-reliance and skill, the expense of them being merely nominal. Mr. Philip Armour, of Chicago, has in view the establishing of a similar enterprise in his own city.

"With the diminution of the hours of labor for the workingman rises the demand as to how he shall spend his time. Because more leisure is coming to people we must create, foster and nourish the desire for pure and elevating amusements, and this fostering of correct tastes must be begun in childhood and cared for under the state and civil authorities. Few studies can claim to do as much as music and drawing toward advancing children in paths of peace, obedience, and order, giving them present happiness, future occupation and a constantly elevated enjoyment.

America must not judge herself nor her arts by standards of Greece and Rome, for the conditions of life now are vastly changed and much improved. We can not do, even if it were a thousand times better worth doing, anything well, except what our American hearts shall prompt and our American skies teach us, for all good workmanship is the natural utterance of its own people in its own day. The art-life which is the result of this new industrial activity will come from the sure and gradual elevation that is the necessary outgrowth of universal purity of thought and action. Inspired by the purpose to educate and thus redeem the masses, to awaken and stimulate an appreciation of nature as the externalization of God's thought—dominated by the Christian idea—the leavening of the entire lump, the nation's aim shall be, not the development of intellect for intellect's sake, nor science for science's sake, nor art for art's sake, but everything for humanity's sake—to make humanity godlike.

* Extract from paper, by Ada M. Laughlin, Brooklyn, N. Y., read before the National Convention of Teachers, St. Paul, Minn.

SANITATION AND HEATING

IN WHAT RELATION SHOULD THE INTELLIGENT, TRUSTWORTHY PLUMBER STAND TOWARD HIS CLIENT IN THE SELECTION OF SANITARY APPLIANCES?*

IT was with considerable hesitancy that I accepted the position assigned me by the chairman of the Sanitary Committee, Mr. Wade, as one of his colleagues, to assist in the work of the committee for 1890, for the advancement of ideas for the best interests of those in the trade. I felt that I was incapable of doing justice to the position, and that older members could accomplish the work with greater satisfaction to the association. The work allotted me requires years of experience as a master plumber; however, I believe that it is incumbent upon every one to do his share of committee work, and if he does not intend to do it, he should not accept the honor. Committee work is a feature of all organizations which is worthy of more attention than it receives, especially in our own, as its prosperity depends upon the activity of the members and the care and attention they give to the performance of the tasks required from them.

The subject assigned me for this evening is: "In What Relation Should the Intelligent, Trustworthy Plumber Stand Toward His Client in the Selection of Sanitary Appliances?"

The plumber of to-day should stand in the same relation with his client as the family doctor does with his patient, as an adviser. He should first inquire, when consulted about undertaking the plumbing of a house, what kind of a structure his client is going to erect, about the amount of money he proposes to expend in building a home for himself and family. After the information has thus been obtained, it is the duty of the plumber to advise his client of what he considers best for him to do, and which he thinks best for him to use in the line of sanitary appliances. This may prove a very difficult task, and it requires considerable experience. The plumber of to-day is not what he was twenty years ago. His surroundings are changed, and the trade has changed. At that time they all had the same ideas as to which was the best closet; now they have at least fifty or more to select from, and they all seem to do the work for which they are intended. Therefore, I think the plumber should use great care in advising what goods to select. He should not let his prejudice against any firm, which for some reason or other may have fastened itself in his mind, enter into the transaction at all. He should by all means advise his client to buy the best that money can get, as it is the cheapest by far in the end.

And now I come to a feature of the business which some of you may be inclined to slight, and think of no real value to the business. Every master plumber should have his own showroom, with a complete line of his favorite fixtures set up all complete and under water, so that he will be able to show his client the advantages claimed for the various designs to be correct.

* Paper prepared by the direction of the Sanitary Committee, and read before the Chicago Master Plumbers' Association, July 24, 1890, by Matthew L. Mandable, member of the Chicago Association.

As it is to-day, the plumber is null and void three times out of five, as the manufacturer is standing in the plumber's place. The manufacturer goes to great expense in fitting up a grand show-room, pays big rent and employs expensive clerks—who, by the way, deserve great credit for the able manner in which they display themselves when your client happens to fall into their hands. Seldom do they lose their sale, for they have got just what the plumber should have—their own specialties to show the public.

I do not wish to be understood as expressing myself maliciously toward any of our manufacturers while on this subject, but I do feel as though the plumber of to-day should endeavor to practice the good example which the manufacturer and jobber have placed before us. We can readily see how easy it is to make a sale when we have the goods to show. The plumber should have his goods to exhibit just the same as any other retail merchant has his goods, and I feel that we are coming more and more to this feature of the business every year. We have good examples of a dozen or more of our members who are awakening to the fact that it is a good thing to have a show-room fitted up with a nice line of sanitary goods. It is highly necessary at the present time for the plumber to stop and consider what position he occupies with his patrons and the public. A great many times he is ignored altogether, and often he is not considered the proper person to consult concerning the class of fixtures to be used. This should not be the case. The plumber should call attention to the fact that the plumbing is the most important work that is put into a building, and he should endeavor to influence his client in the matter of the selection of the best material. He should not be afraid to tell his client that certain goods which he is about to put in are not what he ought to have, that they are not the best fixtures, and try and have him get nothing but the best, so far as it lies in his power.

The curse of the plumber to-day is the cheap, shoddy goods, a big discount as their only recommendation, which supply dealers endeavor to foist upon the trade, the use of which should not be permitted; but as long as they can find buyers they will live and get rich, at the cost of the plumber. But he is himself to blame for this, as he well knows that a good article cannot be bought for the ridiculously low prices which some manufacturers make. It is the sale of to-day which they are after, and not the plumber's benefit; and as long as you buy their goods, they will continue to live. It would be a blessing to the public, as well as the plumber, should the cheap man be wiped out of existence and buried forever, to return no more. Once upon a time goods were sold on their merits, but now the cry is, "How cheap can I sell them?"

ARCHITECTURE.

ARCHITECTURE is a tradition, is a science, and is an art. Inasmuch as it is a tradition, it necessitates a knowledge of the past, where there is an inestimable treasure-house for those who have the key. Being a science, it demands that a knowledge of the resources of construction should be at the disposal of an architect, as also a knowledge of how to most satisfactorily employ these resources. Finally, since it is an art, architecture belongs to the domain of esthetics, which, however, does not here consist of a purely metaphysical elaboration, but rather of a precise and clear expression of the scientific necessities combined with an artistic sentiment in harmony with modern civilization. We shall in this paper, examine briefly the first of these three phases of architecture, reserving the two last for the future.

Architecture, by the visible evidence of the growth of the successive styles, forms a link between the civilizations of the past and that of to-day, although it is a link which has escaped the attention of historians, because architecture is generally ignored by them.

This property of our art of attaching the past to the present by a visible chain, gives it, in addition to the qualities it has, all admit, an importance and a grandeur of character which, it is to be regretted, are not better known and appreciated by the public and especially by our profession. Upon this very fact should be based an argument against fragmentary instruction in the styles of architecture. Instruction limited to the serious study of only one style of architecture hides, not only the unity of the general evolution of our art, which thus ceases to be the constant and faithful reflection of human development in past ages, but also it falsifies to a certain point the style which is being taught. That very style is left isolated like a rock in the midst of human development without any comprehensible beginning or end; instead of itself being, as it is, a living thing developing and growing on lines parallel to man himself.

Each style of architecture being born of the intellectual and moral forces of a human society which seek to work for its profit in its best manner, the constructive resources at its disposal, each style of architecture, I say, has become naturally the expression of a certain civilization, that is to say, of a certain social and religious doctrine, and consequently will not serve as an expression of two distinct civilizations. The using again of a style of architecture, or the adoption by one age of a style as its own other than that which it has itself created, is hence in itself a false principle.

This adoption, or renaissance, which cannot be more than temporary, is, however, easily explained. At epochs of social transition like our own, or like that at the time of the Roman empire, there exists a conflict between the past which some wish to retain, and the future which others wish to prepare for or enforce before its time. This conflict renders the creation, or even the preservation, of a style impossible, since every style being the expression of an accepted social doctrine presupposes all to have the same general esthetic taste.

At present there is no general agreement as to the social doctrines that should be adopted. The old doctrines are indeed falling into decay, but the new has not yet been entirely formulated, much less generally accepted. Hence there is a struggle between the past and the future, from which for the moment results the impossibility of creating a new style of architecture, or even adopting for the time being any one of the old historic styles.

One can, however, foresee the approach of a new style, and even catch glimpses of its essential characteristics. But, while awaiting its final advent, which must be accomplished by slow steps as society changes from day to day, every architect should search in the practice of his art wherever he believes he can find assistance, whether it be from such and such styles of the past, or whether it be from all these different sources at once, but without other guide for his choice than good common sense, or the absolute requirements of his clients.

We shall come out of this temporary disorder as soon as the social doctrine of the new area shall have been definitely settled. Let no one think that this waiting shall be indefinitely prolonged, for from all quarters we hear the echoes of this incessant work of elaboration. If, then, we do not yet possess this doctrine in its clear and incontestible unity, we at least see plainly the tendencies, and it is these tendencies which the architect ought at this hour to study attentively and do his best to express in his work.

He may then take for the basis of his composition whatever style he will; he is free, but he must also respect the liberty of others. The different schools which formerly represented distinct artistic doctrines, and which are now scarcely more than groups, whose members are united by natural tendencies or habits, ought also to be tolerant toward each other, as all are already respectful toward science and disposed to profit by all the inventions of our improved industries.

Can one not see by these signs of the times, by these numerous points of contact, which already bind the different schools one to another, the approaching unity of all schools of architecture?

They will rally about one science of which all will accept the laws—about one esthetic centre and about one industry, which all shall put to their own profit.

The sun is yet below the horizon, but already the clouds reflect the first rays. The rising sun of the new art—I have the firm conviction—will rise in its splendor, before the delighted eyes of our near descendants. I wish to be a prophet for once in my life, although I must here acknowledge that my prophecy is only the logical interpretation of the history of the past and of the observation of the present times.

I hear at this point the voice of some practical reader who cries halt! and who insists upon the fact that ordinarily an architect has to live by his work, and has scarcely the leisure to devote himself to the studies I recommend. He is right, a thousand times right, and it is for this reason that I have demanded, and always shall demand with such instance, organizations for the *higher studies of architecture*. This would be the formation of a special group of workers devoted to research and the exposition of everything which is of a nature to contribute to the progress of science whose forces must be given to the architect, by means of methods calculated to spare his time, without, however, allowing him to lose any of the practical utility of these durable aids.

They should also aid in competitions by keeping the requirements always to the highest level of all discoveries as rapidly as they are made public.

They should enlighten the practical workers upon the best organization of workshops, etc.

The higher studies would give the strength of conscious unity to the different efforts made in view of our progress, and they would exercise a valuable influence upon instruction as well as upon all the practical branches of our art.

Its first benefit would certainly be to create unity in the historical studies, and to classify with order the invaluable jewels which are contained in the traditional treasure-house of architecture.

The five per cent., my practical friend, is alluring and necessary. I acknowledge it. I even find that its defect is its being often insufficient remuneration for the work performed. But ought we to stop on that account? Do you disdain all progress in art? Are you indifferent to public opinion and, consequently, to what is recognized as grand in architecture, and true merit in architects? Assuredly not. Let us then together all demand the organization of the higher studies in order that the architectural traditions shall be better understood, and the instruction be improved so that work shall be made easier for the practising architect. Also in order that the public may be as earnestly taught the moral and intellectual importance of architecture as well as its practical utility, so that they may appreciate at least the numerous points which a good architect should possess.

By this means, the country, our profession and art, would have everything to gain, while those who devote themselves to the higher studies, assisted but not bound down in their efforts by an intelligent government, would indeed deserve much from us all, since they consecrate themselves the difficult task of being the pioneers of architectural progress.

The question of the higher studies has turned us a little from that which at the beginning of this article we wished to examine, and it is time to classify our conclusions as to architectural tradition, as follows:

1. To study the prehistoric architecture as the period of the embryo, which is destined later to develop into the regular style.

2. To study at first separately the special evolution of each style, by showing clearly the action of the three factors which have contributed to its creation, its development and its decadence. The relations of each style to the civilization which produced it will then be established, and then would be shown its connection with the social, religious and artistic doctrines, also with the government. Also the scientific and industrial knowledge of the country and its products, as well as the climate and race under whose influence the style was evolved, will be then indicated.

3. To study afterward all the styles in their historic continuity through the different ages, and in the order of their logical classification, comparing them with each other. To study them with relation to the countries and races until the history of the race is sufficiently well known. To then cause to pass before the eye as completely and faithfully as the science permits, and in a continuous panorama, the evolution of the "humanity architect" from its origin to the present day.

4. Finally, to note the tendencies of progress, which are plainly marked in contemporaneous society, and explain them in the light of these tendencies upon architectural progress. It is thus that upon the majestic pedestal raised by the ancient civilization will be gradually constructed the figure of the new architecture, the symbolic expression of the modern world.

In the future we may examine the two other factors in architecture, i. e., that of science and that of art.—J. Cæsar Daly in *La Semaine des Constructeurs*.

It is said to be the intention of Messrs. James Stewart & Co., of Hamilton, to engage in the manufacture of soil pipe.

Messrs. Joseph Lea, Joseph Mickleborough and J. J. Blackmore are the projectors of a new company which is about to commence the manufacture of water pipe at St. Thomas, Ont.

We regret to make the statement that Messrs. M. Staunton & Co., wall paper manufacturers, of Toronto, have been compelled by dullness of trade and keeness of American competition to make an assignment. The creditors have agreed to a compromise of 50 cents on the dollar.

Mr. Hansen, the patentee of the chimney topping advertised in this journal, in sending out circulars recently to Canadian architects and builders, gave the name of the Canadian manufacturers as being "The St. John's Drain Pipe Co.," instead of "The Standard Drain Pipe Co.," of St. Johns, Que. Our readers when opening correspondence with the company, will please note the correct address.

MANUFACTURES AND MATERIALS

A SENSIBLE FASHION.

THE *St. Louis Lumberman* remarks that for some years back it has been a frequent thing to hear people talk about the "craze" for oak. The large use of it was set down as due merely to a passing fashion, and as having no more solid and enduring foundation than the caprice of the public. It was said to be only a "fad," which the next new moon would in all probability bring to an end. There can be little question that through this characterization of the popular taste for oak the impression got abroad that the demand could not be relied upon from one season to another, and that it was not a safe basis upon which to make large calculations respecting the future of the business. Latterly the notion has begun to give place to a conviction that the fancy for oak is not a fad nor a craze, but one of the necessary results of the improvement in the popular taste. The beauty of natural wood for all finishing and ornamental purposes has come to be appreciated, and this appreciation gives assurance that oak will be a leading favorite so long as wood is esteemed of value for its beauty of colour and grain. The course of the development of the artistic sense cannot be backward; it may make slow progress, and fly on many a discouraging and inexplicable tangent, but withal it still moves on and the process of time shows that some things are gained never to be lost. We believe it is safe to say that a hearty liking for oak is one of these. It is so sensible a taste, and so good a one that it cannot degenerate again into the barbarism of white and mottled colored paints as a substitute for the unequalled variety of figure that natural oak affords. While a taste for beautiful wood endures, oak cannot but stand at the head of native timbers. There is none surely that surpasses it in richness of colour, fineness of grain or susceptibility to the most delicate treatment of the finisher. It fills every requirement of a finishing or cabinet wood. It is beautiful, and the most durable of any available material for such purposes. Strong as the strongest and hard as the hardest, its comparative abundance and cheapness opens for it a field that reaches from the cheapest of factory-made furniture to the finest cabinet work and finish that can be fashioned by human hands. Will this not insure for it a certain market in the future and a large one too?

Messrs. Young & Bro., iron pipe manufacturers of Hamilton, Ont., are considering the advisability of establishing a branch factory at Prampton, Ont. The town offers them a bonus of $12,000.

Fourth Premiated Design for Confederation Life Association Building, Toronto, Ont.

Alfred Flockton, Architect, Montreal, Que.

CANADIAN ARCHITECT AND BUILDER

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CONSTRUCTION · SANITATION · ENGINEERING

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ADVERTISEMENTS.
Prices for advertising sent promptly on application. Orders for advertising should reach the office of publication not later than the 12th day of the month, and changes of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.
Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The Ontario Association of Architects has appointed the "Canadian Architect and Builder" its official paper

The publisher of the "The Canadian Architect and Builder" desires to ensure the regular and prompt delivery of this Journal to every subscriber, and requests that any cause of complaint in this particular be reported at once to the office of publication. Subscribers who may change their address should also give prompt notice of same, and in doing so, should give both the old and new address.

It is to be hoped that the project of a monument to the late Mr. Howard, the donor of High Park, Toronto, will not be lost sight of. Although the by-law for a $10,000 monument was defeated, we cannot but feel sure that if a definite scheme were brought forward looking to the erection of a building, suitable for park purposes and durable in construction, dedicated to the late architect's memory, the people would gratefully vote the necessary money for its erection.

REFERENCE was recently made in these columns to the considerable number of accidents resulting from defective materials and carelessness in connection with the operation of freight and passenger elevators, and the consequent necessity for a system of regular inspection. It is a satisfaction to note that the subject has so impressed itself upon the attention of the City Council of Montreal, that the Legislature of Quebec is to be petitioned to take action regarding it.

IN about five months will be held the third annual convention of the Ontario Association of Architects and the first convention of the Association as newly organized under the charter of the Ontario Government. To make the meetings of practical benefit, a few thoughtful papers should be presented on live subjects. Now is the time to prepare such. Each member who is qualified to do so should feel it his privilege and duty to come prepared with something which will be instructive and of benefit to the profession. The Registrar would be glad to correspond with such.

A CLEVER young lady belonging to Woodstock, Ont., who recently matriculated in arts at the University of Toronto, was taken with an irresistible desire to secure a memento of the old log house erected by her father at North Embro half a century ago. Driving several miles to the spot, she borrowed a saw and set to work to cut a block off the end of one of the logs. She soon discovered that a rock-elm log which had defied the elements for a period of fifty years, was reluctant to yield to the strength of a girl. Her determination was such, however, that after working upwards of an hour harder than she had ever done before, she had the satisfaction of carrying the block away in triumph. Her purpose is to send it to a firm in Chicago who will cut it into small pieces and erect therewith two miniature houses as nearly as possible like the original, and these, placed on the mantel of the modern home, will serve as a reminder of the past and an illustration of the progress in Canadian architecture.

AN editorial article which recently appeared in *Architecture and Building*, complained of the lack of sufficient time allowed for the preparation of designs in architectural competitions. The complaint is without doubt well founded. As a rule the members of building committees seem to imagine that architectural designs can be turned out at machinery speed. One of our contemporary's correspondents, however, referring to the subject, takes the opposite view, affirming that architects entering competitions spend too much time in the preparation of elaborately finished drawings, and that they would save themselves expense and add to their chances of winning prizes, were they to give more time to perfecting their designs, using only pencil outline drawings for the purpose of illustrating their ideas. We would not advise any of our readers who may engage in a Canadian competition to be guided by the above advice, however applicable it may be to competitions in the United States, as here a showy "picture" usually strikes at once the fancy of the judges, and carries off the premium, regardless in many instances of the questions of cost and adaptability.

SOME of the councillors in the Woodstock Court House embroglio seem to be a little mixed in regard to the Toronto Architectural Guild and the Ontario Association of Architects. One man said that he was "sorry that expert testimony from architects outside the Toronto Guild was not obtained." Another said he was "specially instructed to secure the services of the president of the Guild, and he was unable to find any other architect to act with him except another member of the Guild." As we understand it, the Guild is not an official body in any respect. It has no president, and the only officer is a secretary-treasurer, while its rules are few and practically those of a social club. The Ontario Association of Architects is the official body, of which one of the experts, Mr. Storm, is the president. The other expert was Mr. Curry, a member of the Council. The two other experts who reported prior to Messrs.

Storm and Curry were Messrs. Langley and White, the latter a Wondstock architect, and both members of the Ontario Association. The County Council could not very well obtain an architect outside of the Association to join with Mr. Storm, seeing that about 95 per cent. of the profession in Ontario are members of that organization.

OUR attention has been called to a curious phase of external decoration for residences as exhibited in two instances in Fifth Avenue, New York. At the corner of one street are two large and costly mansions, buildings upon which no money has been spared either in the constructive or the decorative works. They are of stone, and the mouldings, panellings, corbels, etc., are all beautifully carved with very fine and intricate ornament; but in both cases the thickly-growing, small-leafed New York ivy has been allowed to overrun the whole of the ground story walls, enveloping every detail. The ivy has been carefully trained and fastened up, so that its outer lines are as straight and regular as the stone work it covers. The appearance is very artificial, and the upper part of the house rises out of a closely fitting green case, that looks as if it had been put on by the decorator at so much a yard. The question naturally arises as to what is the use of all the elaborate carving and the costly dressed stonework, if it is to be ultimately entirely concealed by evergreens.

WHEN the council of a town or city invites tenders by public advertisement from contractors, justice demands that bids by non-resident contractors should receive equal consideration with those of tenderers who may reside within the municipality. It is a regrettable fact, however, that the outsider cannot always count upon receiving such consideration, as instanced by the treatment accorded one of the tenderers for certain work in connection with the construction of a new sewerage system at Brantford. The lowest offer was made by a Mr. Dana, of Brockville, but it was found to be informal in the sense that accompanying it was a cheque for $1,000 instead of $2,000, as required by the advertisement. The committee, evidently understanding that the wrong amount had been placed on the cheque inadvertently, wired Mr. Dana that $1,000 more security was required, and he immediately forwarded another cheque for the necessary amount. Notwithstanding, when the matter came before the Council for ratification, the slight irregularity in connection with Mr. Dana's tender was seized upon as an excuse by the majority of the aldermen to throw out the committee's recommendation of its acceptance, and call for new tenders, with the object doubtless of placing the contract in the hands of a home contractor. Some of the aldermen who were members of the Sewers Committee stultified themselves so far as to vote against their own report. Under such circumstances, it is not surprising that the chairman of the committee should have expressed disgust with the action of his colleagues, and tendered his resignation.

CANADA has to congratulate herself and the Grand Trunk Railway, on the successful accomplishment of one of the greatest engineering feats of the day in the practical completion of the tunnel under the St. Clair river at Sarnia, although it will scarcely be ready for traffic before the end of the year. The work has been conceived and executed by our men, showing that we are quite as capable of conducting great enterprises as are imported foreigners. It is simply a case of being given the opportunity. Our architects are as capable in their own line as are our engineers, but the opportunities are being withheld in an unpatriotic manner by those who ought to act differently. Given the money, our architects can, dollar for dollar, put up as good buildings in regard to both design and construction as can be erected by imported talent. The difficulties to be surmounted were enormous, and were further heightened by the rarity of the existing examples of tunnelling under like circumstances. Great credit is due to the skill and pertinacity of Mr. Joseph Hobson, the chief engineer, ably assisted by his enthusiastic lieutenant, Mr. T. E. Hillman, and a staff who vied with each other in inventing appliances to overcome the unprecedented difficulties which were continually cropping up. The work was principally through blue clay; when the line of the river was reached, quicksand was encountered, and the water could only be kept out by the use of compressed air and heavy bulkheads with air locks for the passage of men and materials. A maximum pressure of 22 lbs. to the square inch was necessary towards the middle of the workings. The pressure was so great that horses could not stand it, mules having to be used. Only men of good constitution were employed after a medical examination. The cost will be over two and a half millions, towards which the Dominion Government has granted a subsidy of $375,000. The length of the tunnel is over 6,000 feet, over 2,300 feet being under the river.

THE New York fire alarm boxes are a decided improvement upon those in use in most cities of Canada. Ours work very well, but their great disadvantage is that the key is not attached to them and has to be fetched from a neighboring house, the entrance door of which is sometimes up a garden path, with the possibility of a locked gate at the foot. To obtain the key it is necessary to ring up the servant, who may be newly arrived and know nothing about where it is kept. There is the further possibility of the key being mislaid or lost. The New York alarm boxes have no key, but a strong brass handle that has only to be turned to open the box, when upon pressure of the dial enclosed within it, the alarm is sounded. Instructions for sounding the alarm are clearly given on the outside of the box. It may be said that a handle that can be opened at will by any mischievous rough, is open to abuse—a cry of "fire" could bring out the whole brigade—but did this occur once or twice, the offender could soon be caught and made such an example of as would deter others from playing the trick again. Then again these boxes are placed in much more conspicuous positions. They form a part of a lamp post at a street corner, and are painted a bright red, so that they are easily distinguished at a distance and are not half hidden in one direction by the telegraph pole to which our boxes are secured. The cost of one of these boxes is considerably more than those in use by us, but it is generally conceded that every minute is of the greatest importance on the outbreak of a fire, whereby, it may be, several thousand dollars worth of property may be saved by the brigade's arrival a few minutes earlier rather than later; so that the cost of the box is hardly worth considering.

THE juvenile population of Toronto has increased at such an astonishing rate during the last five years that the energy of the Public School Board has been severely taxed in the effort to provide the necessary school buildings for its accommodation. Not only have many new buildings been erected, but the capacity of most of the existing schools has been enlarged. To do this work in the brief period in which it has been accomplished was no easy task, and accounts in some measure for the fact that some of the public school buildings of the city are lacking in architectural appearance. The principal cause of this, however, is doubtless the insufficiency of the funds at the disposal of the School Board. So great has been the unavoidable expenditure for new buildings, that the architect was compelled to carefully avoid everything intended simply for architectural effect. After all, the wisdom of erecting barn-like structures designed solely from the utilitarian standpoint and with the object of saving a few thousand dollars, is open to question if not to censure. This is being followed by the more than doubtful policy of putting up within many of the school grounds, and side by side with the school buildings, caretakers' "cottages" which are the very embodiment of ugliness. If the Public School Board cannot afford to purchase sites for caretakers' residences apart from the school grounds, or appropriate an amount sufficient for the erection of presentable cottages within the grounds, they might at least refrain from offending public taste by locating the "dog-kennels," such as they are at present building, in the rear of the schools, where they would be out of sight and therefore out of mind of everybody except the pupils. It seems a matter for regret that the children should be compelled to spend so much of their lives in contemplation of these cheap and nasty structures.

THE idea of a tunnel as a solution of the Toronto Esplanade problem is being mooted. The land damages would certainly be very small as compared with a viaduct, and many of the vested privileges of the Grand Trunk Railway would be left untouched, while traffic would be undisturbed pending its completion. But we doubt if it could be accomplished by the expenditure of a million dollars, as its promoters assert. Why not excavate the whole street and arch it over, as was proposed some years ago for Broadway, N. Y., making practically a two-storey street. The lower storey would serve not only for railway traffic, but could be used as a subway for electric light and telephone wires, gas pipes and even the trunk sewer, which could be made of iron for the distance traversed by the tunnel. The tunnel should be carried through Parkdale as far as the intersection of Queen street with the railway. By putting Queen street north of the railways till it reaches High Park as already proposed, and also carrying all streets over the railway tracks which will run along the Don Valley, our city front would be practically relieved of grade crossings. A grand union station should be located between Yonge and Bay streets, convenient to the principal steamboat and ferry landings. If it could be arranged as a terminal station it would greatly conduce to the comfort of passengers and to the better classification of trains and routes. It would be a great pity to duplicate and continue the present faulty arrangements, which are dangerous and inconvenient, but withal perhaps unavoidable in the case of a large station on a through line. The hundreds of passengers daily using the Grand Trunk Railway have to cross two tracks both inside and outside of the station in order to reach their trains, while it is very difficult for friends to meet travellers unless they have previously agreed upon some point of waiting. Passengers and non-passengers are hopelessly and inextricably mixed, the car steps and passages are blocked frequently by people who have no business on the train, a state of things which would not be allowed for a moment in a first-class station in any other city of similar size.

MR. JENNINGS, the newly-appointed City Engineer, is fast getting a grasp of the various engineering problems which must be faced in the near future in Toronto. The proposal to build subways on the two principal streets is a step in the right direction. Now is the time, when new pavements are being mooted, to press this improvement, which can be done to better advantage than when the situation becomes still more complicated by additional buried wires, pipes, tubes, etc. New York down town streets are fairly honeycombed with a mass of pipes, tubes and wires that look perfectly appalling when laid bare. To lay other pipes amid this net work, or to repair or enlarge those already laid, must be a very expensive matter, in fact in many cases it would be cheaper to abandon them than to repair any great length. The grand jury, meeting recently in the above city, after making a presentment in regard to the evils of the present system, or rather lack of system, held that all companies using the streets be held to strict accountability for any damage occasioned by their neglect, and that no more permits be granted for uptearing streets already covered with pipes, etc. They wound up by the following recommendation: "As a future remedy, we suggest the appointment by the proper authorities of a commission of strictly non-political experts who shall consider the feasibility of vesting the management of street paving and of all underground pipes and sewers, and of devising a new system by which the benefits of steam, gas, water, electricity and sewage can be had more safely, and with less official obstructions." New York should have faced the problem years ago before so many underground conduits were laid. We have the example before us; the complications are beginning and will continue to multiply. Let us be wise beforehand, not afterwards, and the rising generation will bless us for our forethought. The scheme of the Engineer for a trunk sewer seems somewhat more complicated than those previously broached. To our unsophisticated mind a part of the lower intercepting sewer seems to run up hill, at least it takes a northerly direction, while all our streets running north and south have more or less fall to the south. The fact of being able to avoid the expense, both first cost and running, of a pumping plant is a great point in its favor.

EVENTS transpiring in various parts of the world at the present time seem to indicate that the tyranny exercised by the trades unions will before long be broken. From the United States, England and Australia comes the intelligence that associations of employers are being formed for defence against the dictation of the walking delegate who assumes to represent the interests of labor. A serious state of affairs is at present existing in the city of New York, brought about by the use of the boycott by representatives of the union workmen in the building trades. The boycott was declared against four firms of brick manufacturers who refused to discharge their non-union employees at command of the walking delegates. The union mechanics of the city of New York refused to handle the bricks manufactured by these firms or to work on buildings where they were used. The master builders, in their terror of the power of the unions, acquiesced in this refusal. The Brick Manufacturers' Association of New York and New Jersey, which embraces the owners of over 120 yards, espoused the cause of the four boycotted firms, and determined that they would fight the unions with their own weapon by refusing to ship bricks to New York and Brooklyn so long as the boycott was continued. This means that if the boycott ordered by the unions is maintained, the supply of bricks obtainable in these cities will speedily be exhausted and 60,000 workmen will be forced into idleness. There are but few games at which two cannot play, and the boycott does not happen to be one of them. While we are far from upholding the principle of boycotting, the unions have carried their tyranny to the point where it has been found absolutely necessary to use some effectual means of putting a stop to its further progress, and they at least certainly have no cause for complaint if the methods which they have so often exercised, are brought to bear for this purpose. If employers everywhere would adopt the example of the New York and New Jersey brickmakers, a crisis would be precipitated which would doubtless result in the strike and the boycott being declared a crime, to be followed by severe punishment. This would be an important step towards securing the settlement of differences between employers and employees by more civilized methods. Since the above was written information has been received to the effect that a number of the wealthiest manufacturing concerns of the United States, employing between 50,000 and 60,000 workmen, have formed an anti-strike compact. Should the trades unions attempt to enforce unreasonable demands against any one of the associated concerns, all work will cease. The strikers are to be allowed to remain idle until they see fit to return to work and no factory is to employ another worker who may have left another factory on a strike. Neither is any associated factory to seek workers during a strike from any of the federated works. This important movement, as before stated, will undoubtedly extend throughout the world if the dictatorship attempted to be exercised by the trades unions be not abandoned.

MR. J. R. Putnam, architect, of Boston, of anti-trap ventilation fame, and the inventor of the "Sanitas," plumbing appliances, has an incompleted series of articles in the July and August numbers of the *American Architect* entitled "Architecture under Nationalism," inspired largely by Bellamy's "Looking Backward." He defines Nationalism as the "substitution of universal co-operation and education for industrial and social warfare." Considered in its relation to the architectural art, he reviews first the general and then the specific advantages which nationalism will bring. Before enlarging on the benefits to be received to architecture and its practitioners through Nationalism, the writer cites some of the material advantages to be gained, which are quite as seductive as Dr. Lecte could have wished. After enumerating these advantages in a most interesting manner, he goes on to say, "What will be the effect upon the architecture of our country, of this universal enjoyment of wealth and cultivation, this immeasurably improved condition of

the whole people under Nationalism? It will develop a national style of architecture which will surpass in splendor anything hitherto known in the history of the art, even as the superior social state of the ancient Greek republic produced, in the midst of an age of comparative barbarism, the art of Phidias. He then affirms that the conditions which produced and fostered the arts of Greece and its great artists, will be reproduced under Nationalism, and says, "The great wealth of the Nation will give every citizen something of the leisure so fruitfully applied by the ancient Greeks to the study of art. With short working days of perhaps from four to six hours, and frequent and liberal vacations absolutely free from business cares, ample opportunity will be given for physical and intellectual development. Relieved from the all-absorbing occupation of money-making and money-losing, with its long train of consequent evils, and equipped with the complete education received in early life, consisting partly of manual and partly of mental training (the one or the other predominating in accordance with the natural aptitude of the individual), all the useless pursuits, legal, military and criminal, necessitated by the competitive system, being abolished, the entire energy of the whole people will be directed to the cultivation of the arts and sciences including manufacture, agriculture and transportation," and this leads to a reference of the telling words of Van Brunt's introduction to his translation of Violet Le Duc's "Discourses" where he speaks of the difficulties besetting the architect of the present day in regard to the lack of time allowed him for perfecting his designs.

The portion of Van Brunt's introduction to Le Duc's "Discourses" above referred to, is so appropriate to the times that we cannot forbear quoting, as follows: "The atmosphere of haste in which we live is another element distinctly detrimental to the development of good style. But the Greek democracy, says our author, 'had the inestimable advantage of leisure.' The Greek temple, therefore, is an expression of utter tranquility. The very essence of that great art was deliberation. The architect was never hurried; his inspiration proceeded, not from impulse, but from conviction. He built slowly. But with us he is pressed to the completion of his work amidst bustle and confusion. The public is impatient of delay; it must have promptness and despatch at all hazards. The modern Ictinus must supply the design for the new Parthenon, 'ready for estimates,' in three weeks at farthest; and the unfinished study is perpetuated in a workmanlike manner and with all its sins of omission and commission made permanent and monumental. Indeed, all the conditions of life in this country encourage the architect to habits rather of rapid composition than of study and reflection, and tend to make of his occupation rather a business than a fine art. The 'strenuous liberty' which we have inherited involves a constant and often harassing struggle for existence. Therefore the aim of the architect is to multiply his opportunities of professional work to the utmost extent, having in view, first, his pecuniary enrolments, of course, and second, his art. Under these circumstances he has no time to review his studies; he cannot afford, after his first sketches are made and his work is in progress of routine development in his office, to distrust and chasten his favorite *motifs*, with the solicitude and patience of an artist aiming at perfection like the Greek; much less having discovered on reflection a new condition in his problem which would enable him perhaps to raise to a higher plane of artistic excellence or fitness the whole sentiment of his work, to throw aside his old studies and begin anew. This costs too much. If the products of routine and conventionality will satisfy his impatient public, he has the strongest impulse under the circumstances to content himself with the superficial appearance and let the substances of art go for those who can afford it. Art is a mistress who is won by no such partial service.

"As a man sows he shall reap," is a Scriptural verity which seems to be quite as applicable to municipal corporations as to individuals. The difficulty in which the County Council of Oxford finds itself at present in connection with the erection of new county buildings at Woodstock, Ont., is sufficient evidence of this fact. A year ago the Council invited competitive designs for a Court House, and announced that the completed building must not cost more than $60,000. We pointed out that the extent of the accommodation required was so great as to render impossible the erection of a properly designed and constructed building for a sum less than $100,000. The Council turned a deaf ear to our remonstrance and that of the architectural profession, and proceeded with the competition on the lines orginally laid down. A few designs were sent in by Canadian architects, one of which was deemed highly satisfactory, but it had to be cast aside as the designer could not undertake to say that it could be erected for less than $100,000. The plans of a Detroit architect who would undertake to keep inside the limit of cost, were adopted, and the contract for the erection of the building was given to a Detroit contractor.

The work was proceeded with, and nothing more was heard of the matter until last month, when the building committee ordered the contractor to cease work on the ground of inferior construction. A special meeting of the County Council was held, and two architects, Mr. Alex. White, of Woodstock, and Mr. Langley, of Toronto, were appointed to inspect and report on the building. These gentlemen reported unfavorably. The Council, wishing to be doubly sure, appointed Messrs. W. G. Storm and S. G. Curry, of Toronto, to make a second inspection. The result of the investigation which these gentlemen conducted was given to the Council in a formal report, of which a copy is printed elsewhere in this paper. On the strength of these reports, the Council dismissed the architect, one of the members stating that the architect had misled the council in the first place into a bad system and in not doing his work well. He was sorry to have to say that he did not believe it was altogether incompetency on the part of the architect. Subsequently the offer of another architectural firm to superintend the carrying out of the work for a commission of two and one-half per cent., was accepted. It was also thought advisable to appoint a clerk of the works. The original architect expresses his intention of bringing action against the County Council for wrongful dismissal. The contractor holds a certificate from the architect for upwards of $3,000, and he, too, for a time threatened to make it interesting for the Council, who had refused him payment. Upon second thought, however, he consented to proceed with the work, leaving the newly appointed architects to decide regarding the sum which he may be entitled to receive. The former architect refused to surrender his working plans, consequently new ones must be prepared at the expense of the county. It is not known what course the newly appointed architects propose to follow for the purpose of improving the constructive qualities of the building. The proper and only satisfactory method would seem to be to undo entirely what has already been done, lay a proper foundation, and build thereupon in accordance with the recognized laws of construction.

And here it seems proper to inquire upon whom should rest the responsibility for all this expensive bungling? Undoubtedly the blame lies with the county authorities themselves. They required a large amount of accommodation, but fixed the appropriation to cover the cost at a sum which was absurdly inadequate for the purpose. When no architect of any prominence would risk his reputation in an effort to accomplish the impossible, the building committee, instead of increasing the appropriation to the extent necessary to ensure the erection of a good building, handed the work over to a foreigner, whose standing in the profession can easily be gauged by the fact that he immediately took up his residence in Woodstock and proposed to give his whole time to the one undertaking, from which the percentage he would derive would not afford him an income of more than $1,000 per year. The contractor was also a foreigner and unknown, except to the architect, and subsequent events have led people to ask themselves whether there did not exist a business arrangement between the two by which they were to get all they could out of the undertaking. However that may have been, the course pursued by the County Council of Oxford has borne its legitimate fruit. Had they made a sufficient appropriation for the work, and engaged the services

of a competent architect, they would have had a building properly constructed and of creditable appearance, at probably less expenditure of money than will eventually be necessary under present circumstances. And in addition, they would have escaped the delay and annoyance through which they are now passing. There are profitable lessons to be learned from the costly experience of the Oxford County authorities, the Toronto Board of Trade, and the Provincial Government of Ontario which should not go unheeded by other Canadian corporations who may engage in similar enterprises, and which should afford sufficient cause for the revision of the Ontario Architects' Act at the next session of the Legislature.

THE WOODSTOCK COURT HOUSE.

FOLLOWING is the report of the experts employed to report upon the quality of material and workmanship used in the erection of the new county buildings at Woodstock, Ont.:

Toronto, August 13th, 1890.

W. Nanckivell, Chairman of Building Committee, Court House, County of Oxford:

DEAR SIR,—In pursuance of your instructions we visited Woodstock on August 6th and 7th and examined the foundation walls of the proposed new court house for the county of Oxford and now beg to report as follows:

That we made nine openings in the external walls and found that in six of the places opened the cement mortar or binding material had not set and that the same could be broken up with the pressure of the hand. In the other openings the cement mortar had set, but with the exception of the top of the wall at the north east corner it was not really hard. The material on the heart of the walls had the appearance of fine sand, almost devoid of cementing material.

We are unable to determine definitely the amount of cement or supposed cement, used in making the mortar which we found in the heart of the walls for the following reasons:

(1) The specification calls for Portland cement but does not define the quality and we are therefore ignorant of the quality of the cement used.

(2) The specification does not call for a proper quality of sand to mix with Portland cement, but instead either calls for or leaves it to be inferred that a fine sand is wanted.

(3) The method of using the cement according to the specifications was an improper one and would give bad results with the best of materials.

The specification should have called for a Portland cement of a definite quality and it should have been tested to ascertain if it was up to standard as it was brought upon the ground. Sand to be used with Portland cement should be coarse, sharp and clean. Portland cement to give good results should be thoroughly mixed with the sand in a dry condition and afterwards wetted with no more water than will damp it. If too much water is used it will injure the cement. In this case sufficient water was used to make the mixture into a grout, that it might be run into the interstices of the loose stone filling. The water not only injured the cement, but caused the sand to separate from the cement and settle at the bottom, leaving the cement to form a hard crust on the top of the wall.

The problem is to determine how far the quality of the cement, the quantity of cement used, the quality of sand and the methods of mixing individually and conjointly resulted in the inferior quality of the work as shown by the majority of the openings made. We are of the opinion that each and every of the above causes had to do with the result, but to what extent can only be determined after a long and careful series of experiments with samples of Portland cement and sand similar to that used in the walls, mixed in the manner called for by the specification.

If the Portland cement had been of good quality and mixed in the proportions called for in the specification with coarse, sharp, clear sand with a proper quantity of water, the mortar would have set firm and hard in a few days. That the mortar or grout did not set in three weeks and over proves that the materials used were not of good quality or that they were not properly mixed.

We cannot affirm positively that the contractor did not use the proper quantity of Portland cement, because the inferiority of the Portland cement, the bad quality of the sand, and the method of mixing and using were sufficient to give the results shown by the portions of the wall taken down. We have reason to believe and it is our opinion that the amount of Portland cement called for in the specification was not used, as the sand taken from the walls was much cleaner than it would have been if the one-fourth of its bulk had been composed of any quality of cement, good or bad.

The sample of cement which we brought with us from Woodstock is of an inferior quality and did not give good results under the simple tests to which we subjected it. We are convinced that a pail of such cement mixed with three parts of the sand used in the construction of the building would not give an adhesive mortar which would set firm and hard in a reasonable length of time. With regard to the external basement walls we are obliged to come to the conclusion that they are not sufficiently well built to carry the super-structure without settlements, cracks, etc., even if they do not entirely fail.

(1) Because the construction of the wall as called for by the specifications is exceedingly bad, and

(2) Because the cement mortar or grout has little or no binding qualities.

In our opinion it will be impossible to totally remove the stain from the face of the coarser stonework, as Portland cement will leave more or less stains on any stonework which it may touch.

In conclusion we beg to call your attention to the fact, that the specifications, while they call for work and material of a better quality in parts than is necessary, call also in other parts for very inferior work, and are so indefinite or entirely silent in other points that the contractor may read them very much as he may choose, so long as he does a reasonably fair piece of work, according to a fair interpretation of the drawings and specifications in their present condition.

We have the honor to be, sir,

Your obedient servants,

WILLIAM STORM.
S. G. CURRY.

AN AMERICAN CRITICISM.

"AN American architectural journal having called attention to the fact that Canada has a protective tariff on building plans, another architectural journal, published in Canada, intimates that Americans have no cause of complaint, as the American government also levies duty upon the drawings of foreign architects. It also accuses a prominent American architect of wilfully, and without having the fear of Canadian customs officers before his eyes, smuggling a whole batch of American made drawings into the Dominion. And the CANADIAN ARCHITECT sternly demands that this "smuggler" be made an example of. And so we have been "protected" all along, and in our ignorance of the blessings that were being showered on us by a fostering government, have gone on growing poorer and poorer through these hard times! But now a new star of hope has appeared above the northern horizon. We will take our portfolios of unused designs and sneak over the border and, should we be lucky enough to elude or bribe the stern guardians of Canada's tariff laws, we may yet reap a golden harvest. Our lively Canadian contemporary devotes a great deal of attention to the encroachments of American architects upon Canadian preserves, and proposes to call upon all the power of the customs department to make as much trouble for the poachers and "smugglers" as possible. It strikes us that in making all this fuss our contemporary is but paying a left-handed compliment to our Canadian brethren. Are not they competent enough to hold their own in competition against men from a distance? It would seem that the CANADIAN ARCHITECT is so doubtful on that subject that it wants to throw the protection of the law around them. We saw, the other day, a beautifully designed house, in one of our northwestern cities, and, on inquiry, discovered that some man in Canada was the architect. Some Canadians can, evidently, hold their own. This Canadian had carried off some good American money, but hardly anyone living in the neighborhood he had enriched artistically would mourn over the fact. Are not our brethren looking too much to statutory law, instead of putting themselves into line with certain natural laws, to give them success? Probably no body of architects ever had so much of the former kind before as these, our brothers in the province of Ontario. But the Act passed for their benefit by their provincial legislature last winter does not seem to have much effect except to call down upon them the jibes of their brethren in the United States and England. Even the staid organ of the Royal Institute of British Architects cannot refrain from making a little joke to the effect that there have been architects and architects but now it," has been decided that, within at least the confines of the province of Ontario, there shall be architects and "registered architects." It is time that some Americans as well as our brothers in Canada had found out the futility, the folly, of depending on legislative enactments to procure for them the prizes which, with courage strengthened hands they may grasp for themselves."—*Northwestern Architect.*

In reply to the above it is proper to remark, that with the abstract theories of free trade versus protection, this journal has had nothing to do. It has simply dealt with conditions as they exist. The Government of the United States, in its wisdom, saw fit to declare that designs by Canadian architects should not be allowed to cross the border without paying duty. The Canadian Government, believing doubtless that if duties were necessary to protect the architects of so large and important a nation as the United States against the competition of a country of lesser importance, such as Canada, there must certainly be greater need for their imposition to protect the weaker as against the stronger competitor, readjusted the Canadian tariff with that object. We have no fault to find with the honorable competition of American architects for Canadian work, but in view of the fact that Canadian architects are shut out by the United States tariff from competing for American work, American architects who are not above adopting the methods of the smuggler, should not be allowed to "sneak" their plans into this country. We repeat that it is the duty of the Canadian customs authorities, whose attention has been drawn to the guilty parties, to make a determined effort to expose and put a stop to their dishonest practices. Canadian architects do not fear the competition of honorable men, but their ideas concerning the ethics which should govern the practice of men claiming to be members of an exalted profession, are such as place them at great disadvantage in competition with some at least of the American architects who aspire to "reap a golden harvest" in the Dominion. The

ability of Canadian architects to hold their own is in a measure admitted; indeed, in view of some recent examples of American work in Canada, the fact could not well be disputed. Finally, Canadian architects are not responsible for the fact that by the "Ontario Architects' Act" there has been created the absurd distinction of "architects" and "registered architects." The desire of the promoters of the Bill was that no person should be entitled to call himself an "architect" who had not given proof of his proficiency and registered under the Act. While on the legislative dissecting table where the measure was reduced to a mere skeleton of its original form, the word "registered" was inserted.

TORONTO ARCHITECTURAL SKETCH CLUB.

THE second year of this Club was auspiciously opened by a well attended meeting held on Tuesday evening, the 9th September. As at this meeting notice of motion had to be given of any desired changes in the constitution, some discussion took place on the subject, resulting in a notice of motion being given to add to the number of officers by two, namely, a Vice-President and one more Director. A notice of motion was also given to give the Executive Committee power to appoint sub-committees. These changes will be voted on at the annual meeting to be held on Monday, October 6th, when officers for the coming year are to be elected.

Mr. S. H. Townsend, Registrar of the Ontario Association of Architects, spoke at some length on the Architects' Act, giving much interesting information to the architects and students who were present. After explaining fully the necessary forms with which they must comply, he dilated on the bright prospects which were now opening to the profession in Ontario, showing how the rising generation more especially would reap the benefits of the hard work of the promoters.

The President, Mr. C. D. Lennox, then closed the meeting by drawing attention to the competition for Club room decoration, asking for a large response, the Club being anxious to make their rooms present an appearance that would be creditable to so artistic a body.

OUR ILLUSTRATIONS.

LONGUEUIL CHURCH, P. Q.—PERRAULT & MESNARD, ARCHITECTS, MONTREAL.

The Longueuil church has been built on the site of the old church, which dated from 1812. The dimensions are as follows: Total length, 200'; with vestry, 244'; width of nave at the entrance, 86'; width of sanctuary, 77'; width of transept, 135'; height of front, including statue, 116'; height of principal spire, 265'; height of dome, 150'. To dispense with too many columns, and thus obtain a clearer view of the sanctuary, the architects chose a Grecian cross in preference to a Roman, although the latter form would be more in accordance with Gothic traditions. By so doing they obtained a very picturesque effect. The general design is very simple, but on the whole presents an artistic appearance. The furniture, such as the altars, pulpit, vestry, &c., are very complete, and as every one knows, the appurtenances of a Roman Catholic church are very complicated. The total cost of the structure is about $130,000.

TORONTO UNIVERSITY (DESTROYED BY FIRE FEB. 14, 1890)—MESSRS. CUMBERLAND & STORM, ARCHITECTS, TORONTO.

HAZLETON AVENUE CONGREGATIONAL CHURCH, TORONTO.—MESSRS. DICK & WICKSON, ARCHITECTS.

RESIDENCE ON FARLEY AVE., TORONTO, FOR JOHN DOYLE, ESQ.—GEO. W. GOUINLOCK, ARCHITECT, TORONTO.

The death is announced at St. Anne's, Que., on Aug 14th, of Mr. Albert Becker, who in former years was connected with the construction of several important public works in Canada, such as the Lachine Canal and the navigable channel on the Ottawa, opposite St. Anne's.

Legal action has been taken by a Montreal lawyer to set aside the patent on firimite held by G. M. Ford, on the ground that the invention was not patentable. The application was granted subject to the condition that the applicant give a bond of indemnity and with the reservation on the part of the Minister of Justice of the privilege of discontinuing the proceedings at any time should he think fit to do so.

THE PROPOSED QUEBEC ASSOCIATION OF ARCHITECTS.

A MEETING of Montreal architects was held on Sept. 11th in the Board room of the Mechanics' Hall to receive the constitutions and by-laws framed by the Committee of Organization, and to consider the adoption of a few alterations suggested by the Quebec Association of Architects. After full discussion it was decided to amend the By-laws as suggested, and to ask the Quebec Association of Architects to appoint a date for a general meeting of the architects of the province, to take steps at once to form a Provincial Association, and to proceed with the general routine in connection with the same.

MONTREAL.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

BUILDING operations in Montreal have become quite brisk owing to the widening of the various streets. The building material expropriated by the city on the south side of Notre Dame street has been sold by public auction and is now almost entirely removed from McGill street to Chaboillez Square, and builders are now actively engaged in the construction of new buildings to replace the old ones. Among others a large hotel adjoining the Balmoral hotel is under contract for the Smith estate. This will be a handsome limestone building, five stories high, practically fire proof and with all modern conveniences in plumbing, and accommodation for about seventy-five guests; adjoining this building estate Biron are erecting three large stores, Judge Barrie two stores and dwellings; the estate Rodier is also preparing to erect a large building in their property, while alderman Shorey, Mr. Miller and Mr. Wilson have bought in the old fronts and are rebuilding them on the old line.

MONTREAL COURT HOUSE.

The contract for the addition for the Montreal Court House has, I hear, been awarded to Messrs. Berger & Chartrand. The several tenders are reported to have been thrown out by the Government for not complying with the conditions. What the conditions were seems difficult to understand, as several contractors who have large experience in public works have had their tenders thrown out for irregularities. It is rumored that the Government required each tenderer to give a detail price list of all the work the tender included, which most of the builders omitted doing, simply stating in the usual way a lump sum as per plans and specifications.

APPLIED SCIENCE—MCGILL UNIVERSITY.

I hear McGill University has secured the services of two additional professors for the science department under the Macdonald endowment; one to be professor of mechanical engineering and the other professor of experimental physics. It is said that they are graduates of Cambridge and men well qualified for their respective positions. It is to be hoped that such is the case as practical professors of engineering, both mechanical and civil, are badly needed in this country, and now that a special technical building with all the necessary appliances is to be attached to McGill University, the students will expect to get more than theoretical instruction.

PERSONAL.

Mr. Steele, of the firm of Hutchinson & Steele, architects, is giving up practice and intends to reside in England. Ill health is the cause. Mr. Steele was considered one of the best designers in the city and will no doubt be missed.

CIVIC IMPROVEMENTS.

Montreal is this year spending a vast amount of money, whether judiciously or not, remains to be seen. One can hardly pass a street that is not being torn up either for water, sewers or paving. Considerable wrangling has been going on of late regarding the construction of civic work by contract or day's work, and no satisfactory solution seems yet to have been arrived at. Where work has been done by "day's work" property owners complain that they have been assessed more heavily than when similar work has been done under contract.

FLOOD PROTECTION.

Little or nothing has been done in regard to this all important question. The plan submitted by the French engineer to the Government has been by them submitted to the harbor commissioners. His idea is to rectify the course of the St. Lawrence by running a line of wall or embankment across from the main land to Nuns Island and reclaiming all the land inside of that Island and above it to the fourth pier of Victoria bridge. The wall or shore line would commence on the lower end of Nuns Island, run to the fourth pier of Victoria bridge and from that with an inward curve to the point below the Canada Pacific elevators. Below the mouth of the canal the embankment would be a narrowing sphere of land coming to a point at the lower end opposite Brock street, thus reclaiming a large space from the river for harbor and docks and enclosing the still water basin. The long wharf would be cut away, half of Isle Rond would disappear, the channel between St. Helen's Island and St. Lambert would be deepened, leaving Moffat's Island in the midst of two deep channels. Between this Island and St. Lambert it is proposed to construct the bridge with sluices to permit the water and ice to pass in winter and to be closed in summer to send as much water to the main channel on the Montreal side as possible. He claims (like all other plans for the doing away of floods) the erection of a still water harbor and graving docks. The cost is not given but would be great—too great at least to be considered when compared with the advantages to be gained.

MESSRS. CUMBERLAND & STORM, ARCHITECTS, TORONTO.

TORONTO UNIVERSITY.

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LONGUEIL CHURCH, P.Q.

PERRAULT & MESNARD, ARCHITECTS, MONTREAL.

VENICE.

TO-DAY Venice unites to the poetry of her arts the poetry of her recollections, and to the poetry of her recollections the poetry of her sadness. Her palaces are crumbling to decay, her statues fall in pieces from their pedestals, the smiling figures of her pictures vanish as the butterflies at the rude breath of winter.

The blow, which occasioned the variation of human movement towards other regions, as a consequence of the apparition of America in the world and the discovery of the Cape of Good Hope, the wound which ruined her commerce is not of a nature to be cured by her recent liberty, because liberty can not balance or undo geographical fatalities—Venice is dying—only in place of dying as an outcast in an Austrian dungeon, she dies like an honored matron in the bosom of her home and surrounded by her children.

Venice fell at the foot of the cradle of America, like Iphigenia at the foot of the cradle of Greece. The paths of humanity are strewed with victims, and progress is not exempted from this law of necessity. Life is nourished upon death. But on this account it is not the less sad to see a city perish—a city whose Doges had the imperial crown of Byzantium so often in their hands and repelled it by the Phrygian cap of the old republic; to see a city fall whose standard terrified the Turks, and awakened the powers and energies of commerce; to behold the death of a city whose liberties are the most ancient of the Christian era, and who alone has been the England of the Middle Ages; to watch the slow decay of a city who in her cups of crystal, in her bacchanalian banquets, in her sensual songs, in her coral garlands and sea flowers, brought to our hearts and imaginations the immoral aroma of the Renaissance.

How I regretted in that voyage through the streets of Venice that I was not a poet, or an orator, or a writer of any merit—that I could not lament with eloquence the death of that city unique in the world! Ideas of mourning and desolation only were inspired by those floating coffins, those sombre palaces, the magnificent half ruined windows, the tortuous labyrinth of narrow streets and gloomy canals, the shadows outlined on the high bridges, the broken steps of marble, kissed by the wavelets, the murmur of the water like tear-falling on tear, and the cries of the gondoliers, which sounded like a wail repeated by another lament.

Of the arts, I confess that in my opinion the most wonderful and impressive is that of architecture. The stones of Venice, shaped by design as the notes of a piece of music or the parts of a discourse, where beauty and harmony are both expressed, give pure and intellectual pleasure. The great lines, the broad spaces, the ambitious arches, the aerial cupolas, the columns with their adornments, the galleries with their perspectives, the court-yards and their cloisters, force upon the mind profound meditations, and always express the genius of the age with its symbolical character.

I admire greatly the Grecian architecture, its soberness, its severe simplicity, its infinite gracefulness, the facility with which it expresses great sentiments with small means, and attains to beauty without doing violence to form, putting a light frieze, squared, on four fronts of intercolumniations, the whole being in perfect harmony and proportion.

I also admire the Romans, who placed one over the other three kinds of architecture in their monuments, as they placed one above another the three ages of history in their code of laws and in their civilization; and I shall never forget the great dome of the Pantheon where Paganism expired, nor the triumphal arches and magnificent gates of the new age of the world.

Above all, the sentiment with which ancient art always inspires me is a profound admiration for simplicity of form, and for a resemblance to nature in expression. But this enthusiasm for ancient art does not prevent me from doing justice to all the bold and striking beauties of architecture. Nothing is more illiberal than the exclusiveness of art. The architects of the past age—those destitute of refined taste—in their great dislike of the Gothic, succeeded in erecting some grand buildings, not such as could speak to the imagination, but dumb, severe, rigid with all the stiffness of death.

There are styles of architecture distinguished by the knowledge they express, by their complete subjection to the laws of harmony and proportion—such are the Greek and the Roman. Over these centuries have passed, and other things more destructive than ages—the unthinking and devastating rage of men; but that has been unable to prevail against their imperturbable strength and stability. Doubtless there are architectures distinguished by their expression, such as the Oriental and the Gothic. Venice appears in Granada, because Venice has an exclusive and suitable architecture, born of her peculiar historical circumstances, and representative of the ministry exercised by her between the east and the west. In like manner the people of Granada, always preserving the Moorish character which arrived at perfection in the mosque of Cordova, approached the Gothic; the Venetians, preserving the Byzantine and Gothic styles, general in the middle ages, flung over them like a golden veil the rich jewels of the east.

Thus Venice has created this series of monuments that are the wonder of wonders by their variety and their riches. If you go and examine them with Vitruvius in your hand, with the rules of Vignola in your mind, taking with you a square and compass, submitting them to a rigid mathematical examination, demanding from them a blind obedience to the laws of proportion and harmony, ready to feel indignant if you see a gallery supported by iron work, or a heavy column placed upon a slender one, as if ridiculing the general principles of gravity—if you see that a mass of marble weighs like a mountain over the delicate tracery of a light aerial gallery—if you place mathematics over all and above all, you do not appreciate those edifices of the middle ages, that above all and before all place the wealth of expression, the riches of greatness, far-fetched and hyperbolical perhaps, but at the same time extremely beautiful.

Whenever the arts unfold themselves they strongly influence their surroundings. Venice is a magician, who obliges artists to follow her, and impresses her kiss of fire on their foreheads. The artists of the fifteenth century built severe edifices in Rome at the same time that the florid Gothic expanded its open work roses in all Europe as the first flowers of the April of the Renaissance; and the Venetian architects, at the end of the sixteenth century and the beginning of the seventeenth, when the classic art had subdued it, without failing to follow it, crowned the friezes of their monuments, the cusps of their towers, the roofs of their palaces, with ornaments and enamelled chiselings, always of the Oriental and Venetian character.

Let us go then and look at Venice. Our gondola glides over the Grand Canal; the waters are of an emerald green, the heavens of a turquoise blue, the banks of sand are tinged with gold, the houses on the neighboring islets are bright and many-colored, and the marble churches are so transparent that they look like churches of crystal; the sun gilds all objects with its rays. The beauties of Nature and the soft breeze perfumed with the aroma of spring, with the saline exhalations from the sea, fresh and invigorating, invite you with their voluptuous caresses to the infinite joys of existence.

We have time to admire this Grand Canal, which the Venetian painters reproduced in all manners, from the dawn of the school with Carpaccio to its extinction by Canalletto, and have impressed indelibly on the retinas of the lovers of art.

In every town you first look for a monument or point whereon to fix attention—in Seville, the cathedral; in Granada, the Alhambra; in Cordova, the Mezzinta; in Rome, the Colloisteum; in Naples, Vesuvius; in Pisa, the Campo Santo; in Florence, La Piazza della Signoria; and in Venice, the Square of Saint Mark. We arrive at the foot of its magnificent flight of stairs—we remain there in delighted astonishment.

I must confide in the goodness of the reader and hope he will excuse me for so ill describing this place. There is indeed a superb panorama before my eyes and a feeble pen in my hand. In the first place, the lagune, splendidly illuminated by the heavens, and the sun which borders its rays; at the north is the mouth of the Grand Canal, with its rows of palaces; at the extreme right of the mouth is the marble church of Santa Maria della Salute, whose white cupolas are outlined wonderfully in the lustrous air. Before the church, elevated on a graceful tower, is a great sphere of gilded bronze, with an angel of dark bronze on the top. At the left side of the canal is a terrace, blooming with gay spring flowers and butterflies; near is a little square and the palace of Sansovino, sculptured like a work o Cellini, and surmounted by a group of statues—the palace of the Doge at the other end, resting its mass of red and white marble on a double gallery of Gothic arches interlaced by a capricious arrangement of oriels, and adorned at the upper part of the columns with Byzantine sculptures, which harmonize and mingle admirably with the diadem of sharp triangles and the airy belfry above. Before these two monuments, the two columns of Oriental granite, two colossal monoliths, and, above, the crocodile of Saint Theodore and the lion of Saint Mark, which seem to exhale hot breath from their open mouths; in the back grounds to the left, the Campanile, light and elegant, paved by a marvellously sculptured tribune, and crowned by an angel standing on a point and raising his wings on high; further on, at the right side, the Basilica—Oriental, Gothic, Byzantine, Moorish—a mixture of all orders of architecture, an epitome of all epochs, its blue arches sown with stars, its columns of different colored jasper, its statues and its fantastic bell-towers; the four horses of Corinth above the door, mosaics of Venetian glass in the recesses, from the golden groundwork of which wonderful figures of all colors detach themselves; the cupolas above, small copies of those of Santa Sophia, like an apparition of Asia; and in the vast proportions of that panorama, the Riva degli Schiavoni filled with vessels, realized by the picturesque costumes of the Turks and Greeks, by the great Venetian population continually passing in that wide street; beyond, the isle of San Giorgio, with its church of red and white marble, the Gindecia, with its buildings of all colors of the rainbow; San Lazzaro, with its American convent, whose Oriental towers look like the curved sail of a huge vessel; the Lido, with its groves of trees which touch the lagune with their branches, the nightingales filling the air with melody, the gardens like floating islands or gigantic bouquets flung upon the water, all crossed by the blue stripes of the canals, all varied by colors, and gilded or silvered by the sand banks—all diversified by the contrast between the white lateen-sails and the black venetian gondolas which glide around, all lulled by the waves of the Adriatic; the Alps in the distant west, resembling an army of celestial pyramids, and in the far east, like an eternal music, the wind which comes from the shores of Greece. It is unequalled in the world.

The Alderly Brick and Terra Cotta Co. has been formed at Victoria, B. C., with a capital of $50,000.

A Kingston despatch states that Gordon & Fraser, extensive quarrymen of Grindstone Island, have leased for a term of fifteen years the Deer Lake granite quarry.

DECORATION & FURNITURE

THE ACCESSORIES OF ARCHITECTURE.*

BUT for the various other accessories of a more practical and definite nature which perhaps more properly claim our attention, let me tabulate in a desultory way some of those with which it is my intention to deal. These, as they occur to me just now are, sculptor work, figure and ornamental; bronze casting, hammered work in all materials, cast-iron, plaster work; decoration, interior and exterior, embracing such things as papers, painting, fresco, mosaic work, glass tiles, upholstery and cabinet work, and landscape gardening. Any of the topics above mentioned you will think might of itself offer sufficient consideration for the subject of a paper, and I can merely to-night make a few observations upon each.

Before doing so, I will say, however, that in the last 50 years there have been marked strides in every one of these departments, and that the architecture of to-day, from the fact that it can call in to its aid so many independent accessories in a comparatively developed condition, ought to be not only interesting but thorough. The questions involved in the consideration of the above are those with which we are brought every day in contact, and in addressing a meeting of gentlemen like the present I am speaking to those who from their position must necessarily have considerable intimacy and knowledge of the various points. In speaking of calling in the aid of these accessory arts, I do not mean that we are to hand over the designing or detailing of any special branch to others, but that we are to use their deftness and ability to carry out our ideas so far as they are consistent with the subject under consideration, and are to consult with regard to points about which, from their intimate knowledge and experience, they are able to give a sound opinion. I have found, and you must all have found, say with regard to cast iron, men who had worked all their lives in that material, but whose opinion on a piece of design for that very branch was simply not worth having, generally because they had not the capacity to think for themselves, or else had got so much into a groove that they accepted as right all that they had been accustomed to; and the same somewhat severe criticism applies with almost equal force to all the accessory arts. I might say that the same criticism applies in a great measure to modern architecture, for we do not find, even among ourselves, those with large practices and a considerable notoriety, many who never produce any piece of original design or ingenious adaptation, but who are content, from year's end to year's end, to reproduce, *ad nauseam*, what they have been taught.

In considering the accessory arts of architecture, I should wish to direct the attention of our profession to the advisability of invariably, when we can, employing the artists of our own country, yea, even of our own town, in the execution of our commissions, from a purely selfish point of view—that is, of course, always when such employment is not going to interfere with the quality of the work executed. The selfish point of view to which I refer is, that by so doing we raise around ourselves a body of men who, by practice, are able to do thoroughly the commissions they are entrusted with, and who, by being immediately available, do in a great measure strengthen our hands and expedite the work on which we happen for the time to be employed. I would not, of course, advocate the employment of a local artist as such, but in the case where a local artist will do the work as well as another, say, from a distance, I think the preference should always be given to the local man.

Of all the accessory arts of architecture, there is probably none which plays a more important part than that of sculpture. There has been no period of architecture which has not been indebted to this for substantial aid. From the very beginning of our art in the remote ages till the present day, sculptor work, both figure and ornamental, has played a most important part. There have been periods when it seemed to be the only consideration, and when architects seemed to revel in it, not as an assistance, but as the end to be gained. It is almost needless for me to tell you, gentlemen, that such periods were not happy in their results. But I think for the future that these times are not likely to come again, and the chances even are that we do not sufficiently use what, when judiciously used, lead to a very happy combination, and justifies by the results the fashion of the art. Great care should be taken in the way in which sculpture work, both figure and ornamental, ought to be applied. When only a limited amount may be applied, preference, I think, ought to be given to placing it near the eye, where it may be seen, for although the gods may see all around and high up, yet the enjoyment of a comparatively close inspection to a mortal is greater than the knowledge that high up there are works of art worthy of careful attention and inspection, the artistic value of which can be only guessed at from below. In the use of sculpture work, only the very best possible ought to be accepted, as any carving of an inferior sort, instead of being an aid, is a decided hindrance to the effect of any building. Great care should be taken to employ the artists who are masters in the style of carving suitable for the building being decorated, for it is often found that one who is a very good artist in Classical or Renaissance carving does not understand in the least the spirit of Gothic or Romanesque carving, and *vice versa*.

It is now my intention to make a few remarks on the use of metal work. The effects to be gained from a judicious use of metal in architecture are particularly valuable, not only from the rich coloration which may be got, but from the difference in texture of different materials, which is as valuable in architecture as in painting. Who has not been forcibly impressed with the effect of a rich colored bronze, either in the round or the flat, against the cooler gray of stone or granite, or the sweet curves of a fine piece of wrought iron work in an elaborate gate, or adding interest and picturesqueness to some old street in the projecting signs and grotesque forms of a bracket supporting a lamp.

The play of imagination evident in some of the torch bearers, so common on the front of Italian buildings, or the door handles and escutcheons decorating the doorway of some French chateau, indicate a wealth of fancy, and furnish a source of inspiration which no art architect can afford to neglect. What a difference there is always to the art lover in the carefully considered adornments in metal which the real architect causes to be used at his buildings, and which he designs in harmony with the rest of the structure and in appropriateness to the materials used, and the stereotyped patterns culled from some enterprising manufacturer's catalogue, designed in forms glaringly inappropriate to the materials used, and utterly discordant with the general effect of the building.

The temptations to use what one finds ready to hand are undoubtedly great, and the considerations of cost and expedition are often put forward as an excuse, also the lack of interest and appreciation on the part of a client; but the cost of having things appropriate is not greater than that of having them discordant, and after all it is to ourselves that we ought to be true in matters of taste, for it is our taste which will be called in question, and we who will be judged and criticised, when the beauty and appropriateness of the buildings we erect are being discussed. Such considerations as the extra trouble are not really worth contemplating, and are such as no real architect will for a moment consider, as we may take it that his desire is to do the best he possibly can. Of course it is not absolutely necessary that every piece of metal work be specially designed, although it is best in most instances that it should be so. The pieces which may be used are those which have been properly designed for a special occasion, and which happen to be appropriate for the case in point. It is, however, for interior decoration of architecture that metal work is most valuable, and in this connection many metals which are not suitable for exterior work may be used.

You all must have seen how rich were the effects and how varied the forms of which bronze and brass are capable. The rich candelabra, the ingenious or quaint balustrade, the imaginative sconce, with its archaic forms and accidental light shadows and reflections, all add interest to the interiors of our houses. How happy, also, is the use of similar materials in different ways, such as the working in of hammered and cast work together, each process being designed with appropriate forms, and yet the effect of the whole being made more perfect from the assistance which it gains from both processes.

One great advantage to be gained from the use of the *repousse* work is, that in the practice of that art great room is left for the individuality of the workman to develop, that is, if he has the personal capacity in himself. From the nature of the work exact repetitions of any set form is as difficult as it is undesirable, and with each piece of work comes a problem, in the solution of which the mind is kept active, and the possibility of further development increased.

Perhaps the most fatal objection to our modern cast iron work is that it goes out of its own province, which is by no means a limited one, to reproduce designs which are only appropriate to wrought iron. The result of course is, that if the piece of cast iron is placed in a position where it must bear the brunt of ordinary traffic, the inappropriate scrolls are soon conspicuous by their absence, and the want of consideration on the part of the producer is patent to every passer by. Scroll work of almost every description is inappropriate to a cast material, but forms the basis of all hammered materials, which, from their fibrous nature, have strength in themselves to withstand any slight pressure which may be put upon them. It must be evident to all, that from the great thickness with which scrolls in ironwork are generally cast, and even then the frequency with which they are broken and mutilated, that this class of design for cast work is thoroughly inappropriate. It is strange, in spite of the many lessons we have received of this, that still the scroll forms the basis of most cast iron designs.

Great use can be made of cast iron, but it is much more

* Abstract of a paper by Mr. John Keppie, Past President of the Glasgow Architectural Association.

appropriate for panel decoration than for the light treatment which it generally receives. One of the principal reasons for its being used in this way is, that it stands the action of the atmosphere better than any of the hammered metals; but if greater care were taken to design in a method more appropriate to this material, its usefulness would be greatly increased. The use of hammered copper as a means of interior decoration, such as in the panels of chimney pieces, as friezes, etc., will, I think, develop in the course of a few years to a great extent. The various tints and shades which this metal can take, points to it as a most useful material, and one in which we may expect much greater things to be done than we have hitherto seen.

But I cannot, if I am not to detain you unduly, dwell longer on these most interesting subjects, but must proceed to give you some remarks on the other accessories which have been mentioned. Of these I will first notice plaster work. This is a material which, from the facility with which it can be worked, and the fact that decoration in it is generally out of reach, and consequently out of danger of being broken and mutilated, lends itself in a great variety of ways to the ornamentation of our conceptions. The fact also that it is moderate in cost, and when properly used, effective, makes it one of the most popular materials. From the architectural work of past days it is not difficult to find how to use this material properly. There is hardly an old castle in the length and breadth of Scotland where we do not find some panelled ceiling, or other piece of beautiful and interesting plaster work. And in our old towns the same fact holds good; in Edinburgh, especially, to anyone who has the curiosity and will take the trouble to hunt up this class of work, there is a particularly wealthy field, but in almost every town the same holds good. City improvements are gradually doing away with most of the old houses in towns; but architectural societies, notably the Edinburgh one, are doing good work, in preserving records of the best examples; and in their recently published sketch book there are several ceilings which are most interesting in themselves, and valuable as showing what ought to be done in plaster work.

Of these to me the characteristic feature is the delicacy and fineness of the moldings used, the cornice is generally small and self-supporting, *i. e.*, without wood brackets, and the ceiling, instead of being a plain surface, with a large and unmeaning centre flower, is panelled with slight bands, and divided into compartments of varied forms. The existence of these old examples is a somewhat severe criticism on a great deal of our modern work, with its cornices enriched with brackets and modules, dentils and eggs, and darts, representing a class of design only appropriate for a stone treatment, and that almost never-omitted, but utterly unreasonable centre flower, which is the glory of most of our tenements, and which, from its gorgeous and ostentatious form and coloration, speaks forth the taste of the producers of that class of work, and hampers the decorator unnecessarily in his desire to make our rooms beautiful. The use of plaster fiber for panelled ceilings, from the nature of the material, makes it easier for us to design in that way, and from the fire-resisting nature of some kinds of it, helps in a great measure to make our houses fire-proof.

But now let me direct your attention to the subject of decoration, a subject which of recent years has received a great deal of attention, and which ought to command, from the large part it plays in the beautifying of our homes and buildings, a still larger interest than it at present does. The art movements of the day have to a great extent placed decoration on a more reasonable basis than it formerly occupied. The taste for marbled pillars in stucco, with ingenious painting, has to a great extent departed, and our staircases and halls do not so often, as formerly, present to the eye the appearance of costly marbles and granites reproduced in a charmingly inexpensive manner, the polishing being represented by the judicious use of two or three coats of varnish. Now there seems to be a tendency to allow that paint is paint, and paper paper, and that surfaces may be beautiful without at the same time being false. Graining also is to a great extent a thing of the past, and it is difficult to know how much we owe to Mr. Ruskin for the able manner in which he has seen fit to show up this falsehood. If we cannot always use hard woods, we are now coming to the conclusion that it is not absolutely essential that we should always appear as if we were using them, and we are beginning to realize that using less costly materials and producing pleasing surfaces by well-selected tints is not after all a disgrace.

The foregoing remarks tend to show that a more reasonable taste is setting in in decoration, and that we are coming to the conclusion that our houses are more beautiful the truer they are, and that it is not essential for every man, no matter what his position, "to dream," for after all it was only a dream, the falseness of which was patent to all, "to dream he dwelt in marble halls." Some decorators sigh, I believe, for the good old times, when art was well nigh dead, and when picking out in gold leaf and marbling and graining were the order of the day, and when interior stone work was never left its natural color, but was painted and marbled beyond recognition. But these and such as these belong to the order of things that are past and days that are done, and if they intend to hold their position had better come to the resolution to let bygones be bygones, and had better try to fill their position in the general development, and consider that the improvements which are being made now are but the earnest of the improvements that shall still be made.

In no department of decoration is there a more marked improvement than in the design of wall papers. The stereotype forms and the loud and vulgar coloration are not so universal, although still to be found, as they once were. Conventional forms, in pleasing and harmonious colors, are to a great extent taking the place of natural forms, badly drawn in unnatural colors. And it is even possible in some instances to use self-colored papers, or tints which, a few years ago, would not have been tolerated for a moment. The class of papers which seem to me to be most worthy of being used are those in which there is not a great number of colors, but on which the pattern merely gives a pleasing suggestion of a rich effect. When there are forms on the paper they should be well drawn, and any such pattern should not be obtrusive or pronounced, but should hold its own place, and merely add to the general effect.

The use of frescoes in our public and private buildings can be made a source of education, but fresco, as used by the mediævilists, is now almost a thing of the past. In France, where the class of decoration known as fresco is more used than in Britain, the process is now entirely departed from. The fact that frescoes form an integral part of the building, and may be easily destroyed by the presence of damp or accident, has led to the use of canvas and oil paint, which, as it can be removed when desired and placed in another position, or in a place of safety when the times demand, seems to be a movement in the right direction. The painting on canvas or linoleum, or any of the materials now used, gives also a much greater opportunity to the artist to alter and amend his design, and render it as perfect as he is capable of making it. When possible, however, paintings of this class ought to be done in the position they are to occupy, and with the surrounding in which they are to be set, as without this precaution there is great danger of the work not harmonizing with its surroundings, or with the other works of a similar kind already occupying a similar position in the building. As far as possible the works of this class in each room ought to be done by one man, or immediately under one man's supervision and responsibility. If this is not done, you may have as many different effects as you have artists, and the whole suffers accordingly. The exact effect of this may be very distinctly seen in the Pantheon at Paris, which has been decorated by the most distinguished French painters, but as each man has worked out his own idea, there is a great want of continuity in the various compartments, not of history, for they are all scenes in the history of Paris, but in color and form. Although I mention the Pantheon, I do not say that that is the type of decoration at which we ought to aim, for to my mind there is only one decorative work, viz., that of M. Previs de Chevannes; the other works, from their naturalistic treatment, being pictures put in to fill compartments, and not really decorations at all.

In this class of work for the decoration of building conventionality is an essential, for if there is no convention the decoration must really represent a scene such as might be seen through a window or opening, and consequently represent a hole in the wall, which, of course, is not decoration. Anyone who has seen the sparkling and jewelesque mosaics of Ravenna or Orvieto will know how valuable such an accessory as mosaic may be to architecture; but in Scotland we have little opportunity of using it, except in the case of an altar or baptismal font. Surface tiles and floor tiles are, however, often within our reach, and from the exquisite colors and rich polished surfaces it is possible to get in these, they also form a valuable aid.

It is now my intention to direct your attention very briefly to cabinet work. Time was when the architect paid little attention to this branch of his art, but was content to leave that to the cabinet maker, he merely doing the house without considering what was to go in to it either in the matter of decoration or furniture. But with a greater knowledge of architecture there has grown up quite a different spirit, and the architect now is not considered capable unless he can carry out and direct the work from the foundation to the time when the house is occupied. From the amount of fineness, and the delicate molding and carving of which furniture is capable, you can easily understand how to many it has proved a most attractive study. The same principles hold good here as in other branches of our art, which have been summed up in the well-known adage of "decorate your construction, do not construct your decoration."

The last accessory of which it is my intention to speak to-night is landscape gardening. Half the beauty of the jewel is lost if the setting is ungainly or vulgar. If we are to have beautiful houses, we must see that they have beautiful surroundings. The proper placing of the building, the proper intersection of paths and roadways at appropriate points, the placing of our grounds, summer-houses, fountains and other embellishments, which add so materially to the beauty and comfort of our surroundings, clearly proves that a study of landscape gardening is one of the first duties of an architect.

PUBLICATIONS.

"A Successful Man" is the title of what is probably the brightest American story—typically American—which has appeared for many years. It is a story of life prominent in fashion and politics, written by a member of New York's highest society who displays a genius as a writer destined to make her name famous—although she substitutes a *nom de plume* for her own well known one. "A Successful Man" will appear in two parts in the *Cosmopolitan Magazine*—the first in the September issue—and is illustrated by Harry McVickar, the drawings being made from life from acting models who were guests and servants at a Long Island country house. At every page the story is bright and clever, and we are much mistaken if it does not attract the widest attention.

The bursting of a gasoline stove recently caused slight damage by fire to Longhurst & Son's stained glass works at Hamilton.

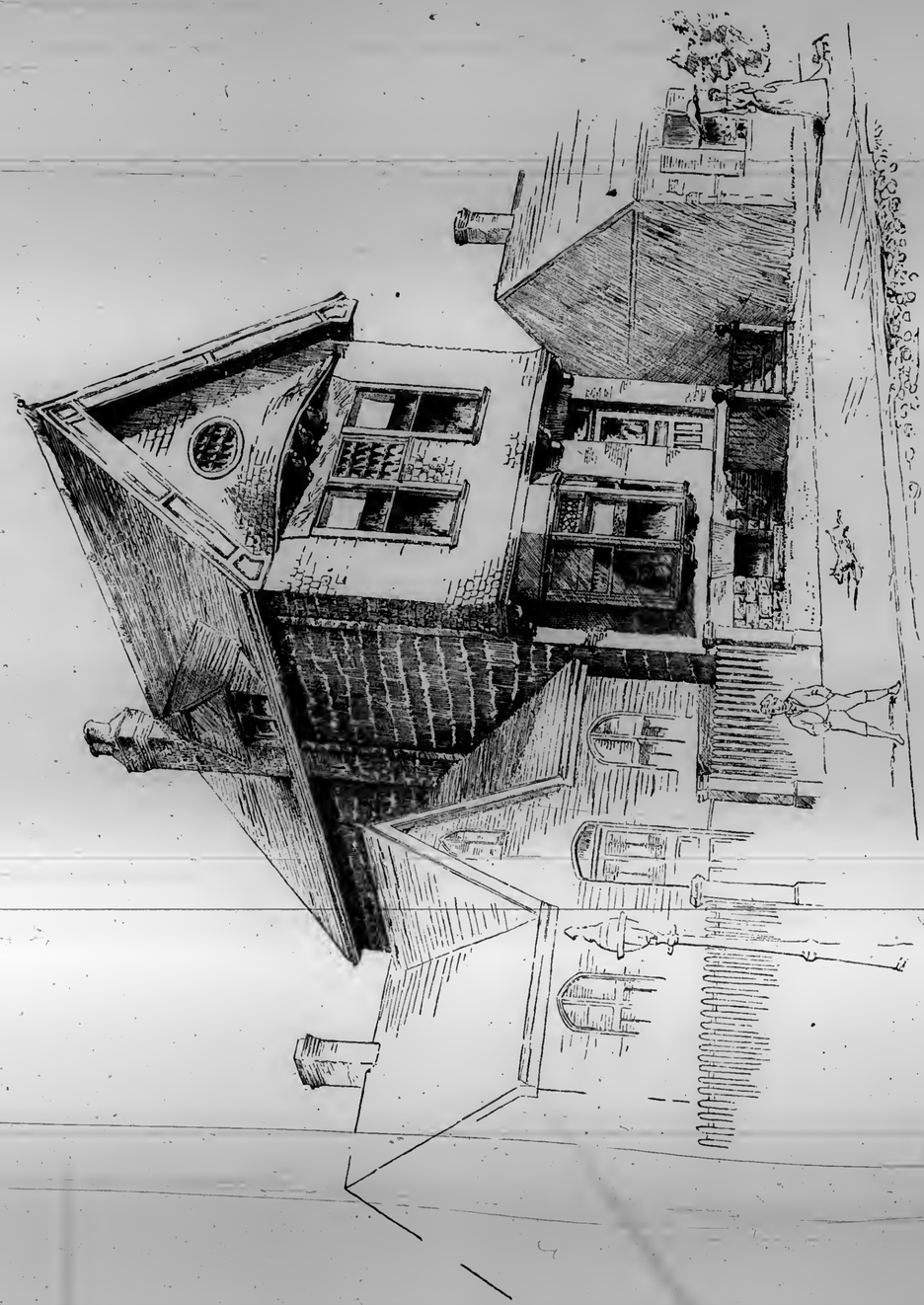
The offices of the Ontario Terra Cotta, Brick and Sewer Pipe Co. have been removed to the Livingston Building, 34 Yonge street, Toronto.

Calgary brown stone is coming into use at Winnipeg. The cost of dressing is said to be very much less than that of the stone procured in the Winnipeg district.

The Sicily Asphaltum Company, Montreal, has been incorporated with a capital stock of $30,000, for the purpose of refining asphaltum and preparing it for use for street paving, etc.

We learn that the Rathbun Co.'s porous terra cotta and hard tile brick is coming largely into use for the lining of outside walls, doing away with one course of the ordinary brick and also the lathing, making all outside walls where such treatment is given absolutely dry (on account of the hollow brick or tile) and also being a fire and vermin proof protector, as plaster takes very kindly to porous terra cotta without lathing.

Hazleton Avenue Congregational Church, Toronto.
Messrs. Dick & Wickson, Architects.



Residence on Farley Avenue, Toronto, for John Doyle, Esq.
Geo. W. Gouinlock, Architect, Toronto.

Hazleton Avenue Congregational Church, Toronto.
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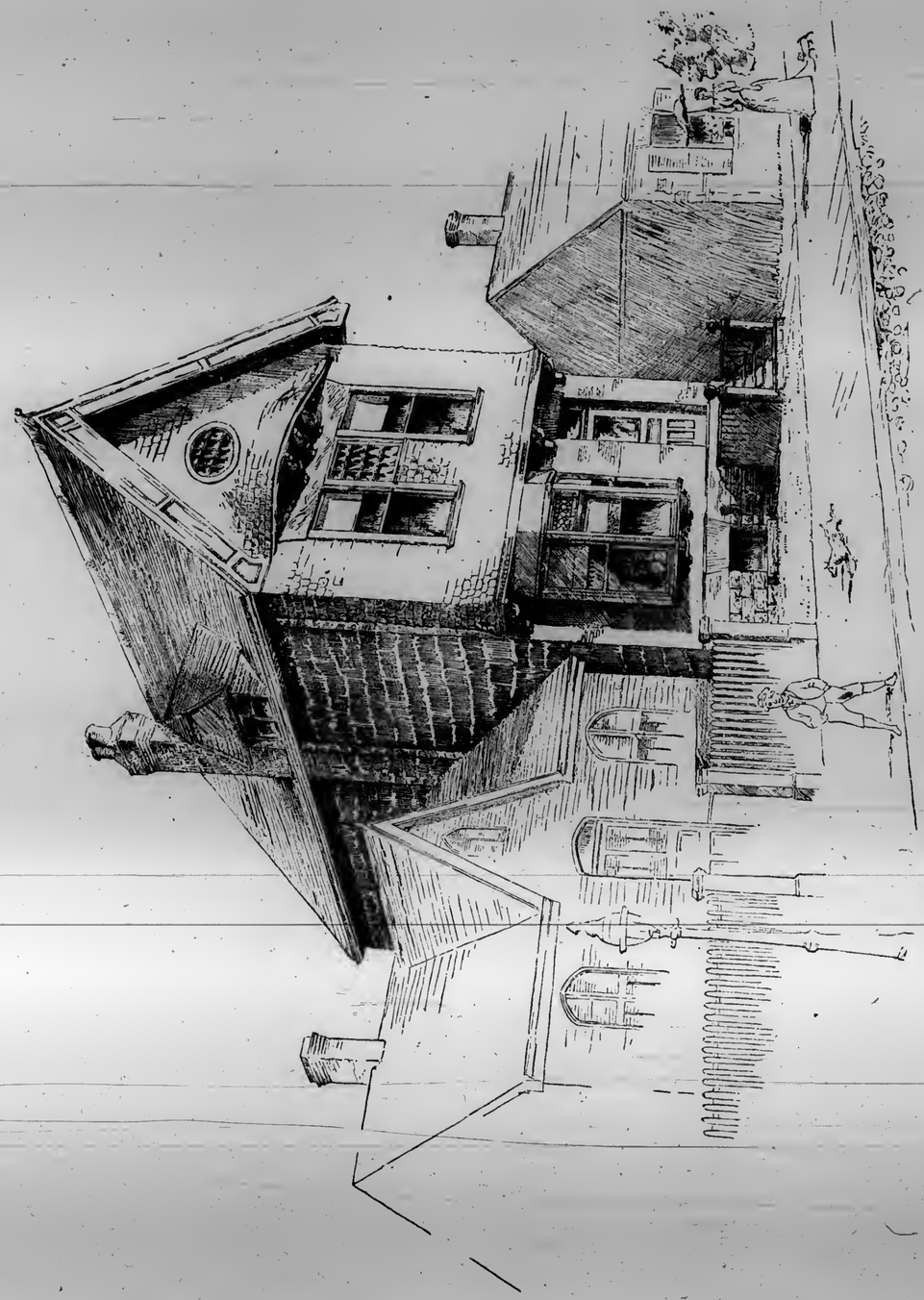

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CANADIAN ARCHITECT AND BUILDER

FINE AND INDUSTRIAL ARTS · DECORATION · FURNISHING
CONSTRUCTION · SANITATION · ENGINEERING

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—THE—
CANADIAN ARCHITECT AND BUILDER,
A Monthly Journal of Modern Constructive Methods,
(With a Weekly Intermediate Edition—The CANADIAN CONTRACT RECORD),
PUBLISHED ON THE THIRD SATURDAY IN EACH MONTH IN THE INTEREST OF
ARCHITECTS, CIVIL AND SANITARY ENGINEERS, PLUMBERS, DECORATORS, BUILDERS, CONTRACTORS, AND MANUFACTURERS OF AND DEALERS IN BUILDING MATERIALS AND APPLIANCES.

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TEMPLE BUILDING, MONTREAL.

SUBSCRIPTIONS.

The CANADIAN ARCHITECT AND BUILDER will be mailed to any address in Canada or the United States for $2.00 per year. The price to subscribers in foreign countries, is $2.50. Subscriptions are payable in advance. The paper will be discontinued at expiration of term paid for, if so stipulated by the subscriber; but where no such understanding exists, it will be continued until instructions to discontinue are received and all arrearages are paid.

ADVERTISEMENTS.

Prices for advertising sent promptly on application. Orders for advertising should reach the office of publication not later than the 12th day of the month, and changes of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The "Canadian Architect and Builder" is the official paper of the Architectural Associations of Ontario and Quebec.

The publisher desires to ensure the regular and prompt delivery of this Journal to every subscriber, and requests that any cause of complaint in this particular be reported at once to the office of publication. Subscribers who may change their address should also give prompt notice of same, and in doing so, should give both the old and new address.

IT is satisfactory to learn that the request of the company which proposes to pipe natural gas from wells on the Niagara peninsula to Buffalo and other places, for the admission duty free of pipe ordered from American manufacturers, will not be complied with. Why was not this pipe procured from Canadian manufacturers? The practice of sending abroad for that which is being produced at home, is one that ought to be discouraged by every person who desires to witness the development and prosperity of the Dominion.

THE Master Plumbers' Association of Toronto has been requested to appoint a committee to confer with the Journeymen's Association on subjects affecting the interests of both. The journeymen are desirous that means should be adopted regulating the number of apprentices and improvers, and that consideration should be given the question of extending the half holiday on Saturday throughout the year, the eight hour day proposal, and the desirability of fixing the maximum rate of wages at 30 cents per hour. The master plumbers have as yet taken no action in response to this request, but it is to be hoped a clear understanding will be arrived at before the new year opens, in order that all possibility of a difficulty arising in the spring may be avoided.

THE Medical Health Officer for the City of Toronto has resigned his position, and in doing so has undoubtedly served the citizens better than by continuing in office as the head of an important department without giving proper attention to its duties. Between neglect of duty on the part of the Medical Health Officer and refusal on the part of the Council to supply the funds necessary for carrying out his recommendations, the public health has to a large extent been left to take care of itself. It is satisfactory to observe that the civic authorities have shown their appreciation of the importance of securing as the head of this department, a man of undoubted ability by asking leading members of the medical profession to assist in making the selection. Under these circumstances it is not too much to hope that the choice will be a wise one. We observe that Ald. Ritchie, a practical plumber who has recently been acting as chairman of the Local Board of Health, is reported to have made the discovery that incapacity marks also the plumbing inspection department. If this charge be well-founded, no time should be lost in demonstrating the fact, in order that steps may be taken to secure efficiency in every branch of the service.

THE action of the Brick Manufacturers' Association of New Jersey in refusing to ship brick to New York City until the boycott instituted by the labor unions against four firms belonging to the Association for refusing to discharge their non-union employees, has had the desired effect. The boycott having been raised, the supply of brick is forthcoming as usual, and building operations are again in full swing. The New Jersey brickmakers are worthy of congratulation, not only on having put a check upon the dictatorship of the walking delegates, but also on having shown to employers elsewhere the advantages to be derived from an exhibition of backbone. Whether as the result of their example or otherwise, a disposition to submit no longer to such dictatorship has extended to Canada also. Mr. Davie, of Levis, P. Q., who contemplated employing a large number of men in the dry dock at that place during the coming winter, was recently waited on by representatives of the Knights of Labor and urged to either dismiss those of his employees who were not members of that organization, or use his influence to compel them to join. Mr. Davie properly enough refused to interfere in any way with the choice of his employees, and to threats of a strike responded that if any attempts were made to coerce him, he would abandon the work entirely. A few such instances of determination on the part of employers to retain the management of their business in their own hands, will have a tendency to keep within reasonable bounds those who so frequently misrepresent the interests of labor.

ONE of the crying needs of our cities and towns is a system of public baths. We have organized systems of scavenging whereby our lanes and back yards are kept measurably free from pollution. We have organized systems of police surveillance protecting us as a rule from serious loss of property. We have systems of waterworks so generally distributed that rich and poor can enjoy its lavish use, while our roads and sidewalks are made and kept in order by the municipality. True, we pay for all these conveniences by being taxed our due proportion, but how infinitesimal is the cost to the individual as compared to what like service would cost him were it supplied independently. Why then should we not have our public baths? We endeavor to keep our cities clean and think we are highly civilized, and yet we allow our poor to go unwashed from January to December. A few members of the male sex may, during the summer months, obtain a dip in lake, river or bay, but at an expenditure of time and money that can be ill afforded by the very poor, while often the need of cleansing is in inverse ratio to the ability to obtain it. We should take a lesson from the Romans who provided most liberally and even sumptuously in this respect. We have appliances far superior to the ancients for procuring, storing and heating the water, and yet, as a rule, we do nothing or wait for private liberality or enterprise to supply this great want. The baths need not necessarily be absolutely free. That which costs nothing is apt to be unappreciated, and it would tend less to

pauperism if a nominal sum were charged, say enough to pay for attendance, towels and soap, while the swimming baths might be free during certain specified days of the week.

AN architect who tries to do all his own designing, and to conscientiously superintend his own work, has his hands full indeed. It is useless to endeavor to disguise the fact that some one phase of his work must suffer if he has attained to a reasonably successful practice—successful in the sense that his income approaches in amount that of his peers in the profession of law or medicine. Either his designs will be commonplace and dull, lacking that element of progress which a growing man should evince, or his details will be stereotyped, the same year in and year out, such as succeeding generations of pupils have copied, and which might be labelled, "No. 1, newel for a house costing $5,000; No. 2, for one costing about $7,000," etc.; or his supervision of the work of the builder will be perfunctory of necessity, for every hour spent away from the office means an equivalent of time, after office hours, spent in the weary endeavor to keep abreast of his ever-increasing pile of drawings to be made or revised, correspondence to be answered, or builders' accounts adjusted. The tendency of the times, when everything is done with a feverish rush, is to divide business into specialties. There is not time for an architect nowadays to become a "good all-round man." By the time he became such he would be a hoary-headed patriarch, with one foot in the grave. The time is approaching when Canadian architects, if they will be abreast of the times and in a position to undertake the best work, must be prepared to pay such salaries as will command competent assistants in all branches of their work, or they must combine in partnership men trained in such specialties as design, construction, supervision and office management.

WE are pleased to be able to lay before our readers a fairly complete report of the proceedings in connection with the organization of The Province of Quebec Association of Architects. We regret that owing to the inadequacy of our reporting facilities, a full translation of the speeches delivered in the French language cannot be given. We shall make the necessary provision in this respect on future occasions. The substance of these speeches has, however, been given. The length of the report has rendered necessary the omitting of a number of interesting articles on other subjects which otherwise would have appeared in this number. They will not suffer in interest however, by being held over for a subsequent issue. Lack of space and the late date at which the report of the meeting in Montreal reached us, renders impossible any lengthy comment upon the proceedings at the present time, but occasion will be found in the future to again refer to the subject. Meanwhile, we can only congratulate in the heartiest manner possible the architects of Quebec upon the success which has crowned their united efforts to bring into existence an organization designed to promote the interests of the noble profession in which they are engaged. Considering the large membership with which the newly formed Association enters upon its career, the unanimity which characterized the proceedings of the inaugural meeting, and the desire for harmonious and progressive action for the future marking the utterances of every speaker, there is little reason to fear that the Association will not live to achieve many if not all the desirable objects which its promoters design it should accomplish. The Ontario Association of Architects, we are quite sure, appreciate and reciprocate fully the many kindly sentiments expressed towards them by their brethren in the Province of Quebec, and the time will no doubt come in the near future when the members of the two organizations will know more of each other. To the Committee of Organization, Messrs. J. Nelson, A. Raza, A. C. Hutchinson, J. B. Resther, J. W. Hopkins, A. F. Dunlop, W. E. Doran, C. Cliff, and A. P. Taylor, are due in a very large measure, the credit for bringing about the union under such happy auspices of the architects of the Province of Quebec. They have accomplished a good work, which entitles them to the esteem of their professional brethren of this and future generations.

THE condition of affairs which has recently prevailed in connection with the water supply of the City of Toronto, is indeed of a serious character. That the city was in danger of being suddenly reduced to such an extremity, seems not to have been considered by the citizens to be possible, much less probable. Their refusal to vote the money for additional pumps would seem to show that they stood in no fear of a failure of the supply. The repeated endeavors of the Superintendent of the Waterworks Department to secure increased pumping capacity shows plainly enough that the situation of affairs was not unknown to him. The carelessness displayed by the contractor who drove a pile through the intake pipe, simply precipitated a crisis which sooner or later was certain to come. While the responsibility for the failure to provide the means to protect the city against a water famine clearly rests with the citizens themselves, who refused to authorize the appropriation of funds for that object, the management of the Waterworks Department seems to be deserving of censure for having neglected for eight years the cleaning of the reservoir. It is impossible to say how much longer this necessary duty would have been deferred had not the reservoir been emptied by the inability of the pumps to keep up the supply, thereby revealing to public gaze the accumulated mass of filth of which it was the receptacle. It is impossible not to believe that sickness and death have been the result of this neglect in the past; let us hope that for the future the cleaning process will be performed at much shorter intervals, say once a year. There is little doubt that having had their eyes opened to the danger to which the city is exposed, the citizens will no longer refuse to authorize the expenditure necessary to insure an ample supply of water to meet all requirements. The present system of supply is a most expensive one, but so much of the city's money is invested in plant, etc., that nothing we suppose remains to be done but to increase the pumping facilities from time to time as the growth of population may demand. The idea of spending about $50,000 per year for all future time for the coal necessary to force the water uphill, not to mention salaries and other expenses incident to the operation of the pumping machinery, is not a pleasant one to contemplate from an economical standpoint. The belief is gaining ground that the city's interest would have been better served by the adoption of the plan presented some years ago for obtaining the necessary water supply from Lake Simcoe. The first cost would certainly have been great, but the cost of subsequent operation would have been nothing as compared with the present system.

WE are asked by an architect in a letter appearing in this issue above the *nom de plume* of "Five Per Cent," to express our opinion of the architect who pays commissions to those who bring work to his office and accepts commissions from contractors in return for specifying their goods. Our correspondent also wishes to know how long the Ontario Association of Architects would tolerate a man guilty of such practices. In reply we have simply to say that professional etiquette forbids an architect to adopt the trader's method of employing persons to drum up business for him. Apart altogether from the question of professional ethics, it is difficult to see how an architect could afford out of his commission of five per cent. to pay for such service, without resorting to dishonesty in some form or other. The person claiming to be an architect who will seek to enrich himself by accepting bribes in the shape of commissions from contractors, lacks the principle which distinguishes the honest from the dishonest man in every walk of life, and brings disgrace upon a noble profession. Undoubtedly it is the proprietor who suffers from such dishonorable practices, therefore one of the most important things to be considered in the employment of an architect should be the integrity of his character. So far as the Ontario Association of Architects is concerned, it is not disposed to tolerate unprofessional conduct on the part of its members. It must not be forgotten, however, that in the formation of the Association it was not possible to exclude any practising architect. Consequently, it is more than probable that through the widely opened door there entered some whose code of practice is not what it should be. The weeding out process must begin at no distant day, but the eradication from the membership of the Association of all unworthy persons will be the work of time. Meanwhile, for the benefit of young architects and others who may be anxious to speedily attain to a large practice, it should be said that ultimate disappointment and failure is certain to be the reward of a departure from the honorable principles which have governed the practice of the great architects in all ages. Seeming prosperity may for a time attend such a departure, but the architect who is desirous of reaching a position of permanent honor and emolument must depend only upon his integrity and ability.

THE TORONTO ARCHITECTURAL SKETCH CLUB.

ON Monday evening the 6th of October was held the second annual meeting of this progressive Club, when a large amount of business was transacted. Before settling down to work the members were entertained by the humorous versatility of Mr. J. A. Radford, his many *points* being fully appreciated.

The report of the treasurer made a very fair showing for the Club, considering the many financial drawbacks of a first year, and credit is due to Mr. E. Wilby for the zealous way in which he looked after the "filthy lucre." The retiring President, Mr. Chas. Lennox, made a very concise and pertinent speech, in which he took occasion to remark on the successful work done by the Club during the past year, and the very gratifying prospects for the future, there being no reason why it should not be equal to any on the continent; indeed the general improvement noticed in the work of the members since the first competition seemed to indicate that this was fast becoming the case. He also referred to the help afforded the club by the CANADIAN ARCHITECT AND BUILDER.

After some amendments to the constitution had been adopted, the election of officers took place, the result being as follows:—President, Mr. S. G. Curry; Vice-President, Mr. A. H. Gregg; Secretary, Mr. C. H. Acton-Bond; Treasurer, Mr. A. Clarence Barrett; Directors—Messrs. H. W. Matthews, Henry Simpson, and W. R. Mead.

The President elect made a few remarks in which he pointed out the desirability of forming classes in construction and mathematics, especially in view of the approaching examinations for registration.

The Club is to be congratulated on its new president, who is everywhere known as a "pusher." The next meeting of the club will be held on Tuesday, the 28th inst., when the drawings of the competition for a cottage by the sea, for which prizes have been offered by Miss M. Radford, will be on exhibition, and a lecture will be given by Mr. Sam. M. Jones on "Stained Glass as a Decorative Art."

An invitation is extended to all who are in any way interested in architecture to attend this meeting if possible.

DISHONORABLE PRACTICE.

Editor CANADIAN ARCHITECT AND BUILDER.

SIR,—If an architect to obtain business pay a commission to any party who provides clients for his office, or, if an architect give his services to his clients *at* below the regular commission of 5%, calculating to make up the difference, or even more than the difference, by receiving commissions (or blackmail) from the contractors, or those furnishing material, or, receiving from his client the full rate of 5% for his services, then the architect, in addition to his full commission as paid to him by the proprietor, accepts 5, 10, or even as high as 20 and 25% as the case may be, from the contractors, or those furnishing material upon the contracts, in what esteem should he be held? And should an architect carrying on his profession in any such disreputable manner be unfortunately found within the ranks of the Ontario Association of Architects, how long do you suppose the Association would tolerate him within that body? Who, in the end, is the real sufferer from such dishonorable practices; the contractor, or the proprietor? I think I hear you say, the proprietor, every time.

I have no doubt your answers to and comments upon the above queries will be very interesting to the members of the Association, and to architects generally throughout the country, and furthermore they should produce a very beneficial effect, at least I hope so, for the general welfare and honor of the profession.

Yours truly,

FIVE PER CENT.

SCHOOL ARCHITECTURE.

THE issue of *Architecture and Building* for October 4 is specially devoted to school-house architecture, and contains some 21 designs, many of which are by well known names. The letter press also is almost entirely devoted to articles relating to school architecture, and is replete with practical hints and details.

The leading article occupying the first page is a good, yet brief, *resume* of the best practice and ideas that are now embodied in school-house construction. The five important points touched upon are first, lighting; second, amount of floor space to each pupil; third, ratio of cubic feet of space to each pupil; fourth, methods of heating and ventilation; fifth, architectural design.

Among the other interesting articles are, "The Growth of School Architecture"; "The New York Trade Schools"; "Sanitation in New York Schools"; and "Heating and Ventilation of School Houses."

The designs are, on the whole, disappointing, and the planning in a large number defective in some one important point. It is perhaps almost impossible to obtain the ideal school house with a great aggregation of rooms economically disposed in regard to construction, heating and administration. Probably the limit is reached in a school-house having not more than three or four rooms on each floor.

An attempt has been made in several instances to introduce the unilateral system of lighting without reference to aspect. No room with its longer side having a sunny aspect is suitable for lighting on one side only. The rays of the sun for some hours of the day will necessitate the shutting off of a large amount of light by means of blinds, making the farther side of the room dark, and straining the eyes of the pupils.

Some of the plans show unilateral lighting from the long end of the room, one especially erring conspicuously in this respect, indicating to what bad uses an otherwise good idea may be put by a thoughtless follower. Others of the designs have windows facing the scholars, apparently for the simple purpose of fenestration and regardless of the comfort and eyesight of the children.

Some architects seem to regard a blank wall with abhorrence—perhaps because "nature abhors a vacuum," and from a desire to be "near to nature's heart." It is a poor school design which cannot stand a few square yards of plain wall surface.

One design shows how windows may be "grouped" without interfering with the best requirements in regard to lighting. Another design is seriously defective in the location of two rooms on each of its six stories, in that these rooms derive their light and air solely from a well about 12 feet wide, and the nearest window being removed at least 22 feet horizontally from unobstructed light. While the rooms in the two upper stories at most might receive a fair quantity of light, one may imagine the state of gloom resting upon the children assembled say in the ground floor class-rooms—such rooms would be simply nurseries for the propogation of defective vision.

With regard to exterior design, as we said before, the illustrations are as a rule disappointing, but at the same time a decided advance upon the type in vogue a few years ago.

The most satisfactory and the most simple withal are, we think, those by Stevens & Cott and J. A. Schweinforth, and one or two of the prize designs for low-cost school buildings.

QUERIES AND ANSWERS.

CHARLOTTETOWN, P. E. I., Sept. 26, 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—Would you kindly tell me in the next number of your journal the load a juniper post or pile 10" diameter and sunk 3'6" in hard ground will sustain before sinking into the earth or otherwise failing. The post is set in an ordinary post hole, and filled in around with earth well rammed in the usual manner.

Yours truly,

C. B. CHAPPELL.

[We are not familiar with juniper wood in this region, but presume the writer refers to "juniperus Virginiana," a species of red cedar.

The writer does not give the height of the post above ground or the character of the soil. If the post is chiefly in the ground, the question of the amount of load it will sustain of itself is immaterial, as its strength is enormously greater than the bearing capacity of the soil on which it rests.

If the soil is coarse gravel or sand, the safe load would be 2,500 to 3,500 lbs. to the square foot, and if of clay, 4,000 lbs. A 10" post would therefore carry about 2,200 lbs. in the former and 3,000 lbs. in the latter soil.

The post itself would safely carry about 25,000 lbs., and to reach a like carrying capacity on the part of the soil, it would be necessary to form a bearing surface two and a half feet square, which could be accomplished by means of a large flat stone which would require to be 10 to 12 inches in thickness in order to avoid a tendency to break off at the point of bearing of post.

A white-wood post 12 feet long 9½ inches in diameter tested at the U. S. Arsenal, Watertown, Mass., required a *crushing* load of 180,000 lbs. before signs of failure became manifest, while in the case of a pine column of similar size the crushing load was 265,000 lbs.—ED. C. A. B.]

ST. THOMAS, ONT., Oct. 5th, 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—Can you oblige me with a receipt for red brick coloring? I want to stain white brick to red.

Yours truly,

ALFRED HORTON.

[We are not familar with any receipt for staining white brick. The Collegiate Institute on Jarvis St. Toronto, was treated with a stain manufactured by Cabot, of Boston, and which is fairly satisfactory. We understand the cost was not greater than the cost of a single coat of oil paint, while the effect is equal to two coats. Reference to our advertising columns will give the address of the Toronto agents of this stain.—ED. C. A. & B.]

APARTMENT HOUSES.

WHY should not cities such as Toronto, London, Ottawa, Hamilton or Kingston, have apartment houses? The old time citizen accustomed to his "bit of garden" is apt to hold up his hands in holy horror at the suggestion, forgetting that times have changed, and that these places have got beyond the village conditions.

It is contended that there is no privacy in these great piles, that there is no place for children, and that many other things are lacking to the man who considers his home his castle. But what are the conditions and surroundings of the average citizen in Toronto, for instance, who pays from $15 to $30 per month rent? He is squeezed into a narrow slice of building say 12 to 16 feet wide—one of perhaps a dozen domiciles in one long uninteresting block. If the house faces east or west he gets some sunshine in the morning and a glint in the evening for a few moments between the long rear extensions which have a space of from 3 to 5 feet between each. If the house faces south he gets no sun whatever in the rear, and *vice versa*, except perhaps for a few moments of a summer evening. He cannot stroll in his 12 x 20 back yard without feeling that he is exposed to the gaze of

the occupants of half-a dozen houses, and his children must romp in the public streets.

It may be a surprise to some, but it is a fact that nearly one half the cubic contents of an ordinary house may be classed as unavailable, that is, taken up by cellerage, halls, stairs and roof space. The proportion of unavailable space in an apartment house is not more than one-fifth as much.

With a well laid out apartment house, a greater proportion of sunlit living rooms may be obtained, while a well-lit court beautified with flowers and a fountain would replace the narrow and ill-kept backyards.

Labor saving appliances in the apartment house may be multiplied at small cost. The host of furnaces with their dust, dirt, ashes and care, are dispensed with, a contral heating plant being substituted, while every apartmeht may have its own automatic heat regulator. Lifts, electric lights, and speaking tubes would take the place of the wearisome and cumbrous methods of life at present in vogue.

The buildings could be made far more attractive architecturally, both inside and out, while the sanitary appliances could be of a description far superior to those which obtain in an ordinary house. Isolation could be better secured—thick walls and sound-proof floors taking the place of flimsy dividing walls through which an ordinary conversation may be heard.

The worry and labor of house-keeping would be much reduced. In certain cases the kitchen could be omitted and co-operative cooking and washing adopted, still further reducing the labor and responsibility of the housekeeper.

Available space equal to that in the ordinary house, plus the advantages above remunerated, could be obtained with no more, and probably less cost.

The advantage of families being able to obtain just the number of rooms required is another point in favor of the apartment house. Quite a percentage of small families of moderate income are compelled for the sake of respectability and decency to lease houses larger than their needs or resources warrant, and to eke out the rent have to let furnished rooms or take in boarders. To these the apartment house would be a great boon.

OUR ILLUSTRATIONS.

SUN LIFE ASSURANCE CO.'S BUILDING, CORNER ST. ALEXIS AND NOTRE DAME STS., MONTREAL.

The basement is built of Thousand Island granite, and the superstructure is faced with light yellow sandstone from Alnwick, England. The building is intended to be a thoroughly fireproof one. The Sun Life Assurance Co. will occupy the first and second floors, which will be handsomely fitted up to suit their requirements. The ground floor, basement, and two top floors will be let out as general offices. All fittings throughout the building will be of the latest and most approved description.

RESIDENCE FOR M. D. BARR, ESQ., TORONTO.—SPROATT & PEARSON, ARCHITECTS, TORONTO.

"CANADIAN ARCHITECT & BUILDER" COMPETITION FOR INSIDE FINISH—SUBMITTED BY "ECHO."

PUBLICATIONS.

"Brickmaking and Burning," T. A. Randall & Co., publishers, Indianapolis, Ind., price $2.50. This work is a handsomely bound and valuable work being a practical treatise on brickmaking and burning, and the management and use of different kinds of clays and kilns for burning brick with a supplement for new beginners in that work and hints to bricklayers and builders. The author, J. W. Crary, Sr., is a successful brickmaker of many years experience, and in this book has given in a plain, practical way his views and experiences in all the details of the work. The book is a veritable storehouse of knowledge on the subject and should find a place in the library of every worker of clay. There is also much in the work of interest to architects and builders.

Captain Charles King, who recently visited St. Paul and Minneapolis for the *Cosmopolitan Magazine*, has prepared for that monthly an illustrated article entitled "Twin Cities of the Northwest" which will prove interesting reading not only to the citizens of these two cities, but also to a great number of readers scattered throughout the country who have watched with astonishment the marvellous growth of these towns. His article will appear in the October issue, which will also contain the second part of a story by Julien Gordon, the *nom de plume* of one of New York's famous society women, a story which has attracted wide attention throughout the east, the writer bidding fair to make a reputation far in advance of Amelie Rives, or any of the American stars appearing upon the literary horizon within the past two or three years.

Mr. Frank Darling, of the firm of Darling & Curry, architects, Toronto, has been spending the last three months in Europe.

It is a pleasure to learn that Mr. W. A. Edwards, architect, of Hamilton, is fast recovering from a serious attack of typhoid fever.

ORGANIZATION OF THE PROVINCE OF QUEBEC ASSOCIATION OF ARCHITECTS.

IN response to a circular sent out by the Committee of Organization, the following architects assembled in the Mechanics' Institute building, 204 St. James Street, Montreal, on the 10th inst., with the purpose of organizing an Architectural Association for the Province of Quebec: Messrs. A. C. Hutchinson, J. Nelson, Chas. Baillairge, J. F. Peachy, A. F. Dunlop, A. Raza, M. Perrault, J. W. Hopkins, V. Roy, W. T. Thomas, W. E. Doran, F. X. Berlinguet, W. McLea Walbank, Jos. Verne, A. J. Pageau, S. Lesage, J. A. Proudfoot Bulman, J. Z. Gauthier, A. J. Taylor, J. Y. Resther, Theo. Daoust, G. E. Tanguay, D. Oulette, J. H. Bernard, J. Wright, L. R. Monthiault, G. G. Languedoc, J. A. Chause, R. Findlay, A. Gendron, L. C. Everest Page, H. Stavely, J. B. Resther, Chris. Clift, W. H. Hodson.

Letters were received from Mr. Fowler and Mr. Bertrand, regretting their inability to attend.

It was moved by Mr. Dunlop and seconded by Mr. Clift, that Mr. A. C. Hutchinson take the chair. Carried.

Moved by Mr. Peachy, and seconded by Mr. Bulman, that Mr. Clift act as Secretary. Carried.

The Chairman ably passed a few remarks on the desirability of forming an Association, after which it was moved by Mr. Hopkins, and seconded by Mr. Berlinguet, that we organize under the name of "The Province of Quebec Association of Architects." Carried.

The Chairman then laid the Constitution and By-laws as prepared by the Montreal Organizing Committee and amended by the Quebec architects before the meeting. They were dealt with clause by clause, being read in English and French, as follows:

CONSTITUTION.

ARTICLE I.—The name of this organization shall be "The Province of Quebec Association of Architects.

Agreed on unanimously.

ARTICLE II.—The objects of the Association are to faciliate the acquirement and interchange of professional knowledge among its members; to promote the artistic, scientific and practical efficiency of the profession, and to endeavor to obtain by legislation the power to regulate future admissions to the study and practice thereof.

Agreed on unanimously.

ARTICLE III.—The Association shall consist of three classes: Members, Students, Associates, and Honorary Members. Members shall be those engaged in the active practice of architecture in the Province, and who shall join this Association within six months of its formation, and those who shall be hereinafter admitted according to the By-laws governing the same. Student Associates shall consist of employees, and students actually engaged in the offices of members for one year previous to the foundation of this Association, who shall be admitted on the certificate of their patrons. Future Student Associates shall be admitted on passing the examination required by the By-laws to govern the same. Honorary Members shall be persons not following the profession but interested in the study of Architecture, who by their connection with Art or Science are qualified to concur with Architects in the advancement of professional knowledge, and who are unconnected with any branch of building as a trade or business. They shall be elected in the manner hereinafter mentioned.

Agreed on unanimously.

ARTICLE IV.—The status of an Architect is defined as follows: An Architect is a professional person, whose occupation consists in the artistic and constructive designing of buildings and in supplying the drawings, specifications and other data required for carrying such design into execution; also in exercising admininstrative control over the operations of contractors employed in the construction of said buildings; in officiating as arbitrator of contracts, and stipulating terms of obligations between proprietor and contractor.

Agreed on unanimously.

ARTICLE V.—No member shall accept of any pecuniary consideration or emolument from any builder or other tradesman whose works he may be engaged to superintend, nor shall he have any interest in any trade contract, or materials at any works the execution whereof he may be or have been engaged to superintend.

Moved by Mr. Roy, seconded by Mr. Baillairge, that the words "or emolument" be struck out. Carried.

ARTICLE VI.—The business of this Association shall be managed by a Council of ten. The Council to consist of a President, two Vice-Presidents, Secretary-Treasurer, and six members, all of whom must be members of the Association in good standing. The officers and three members of the Council to be elected by ballot at the annual meeting; the other three members to serve in the Council by rotation, in the manner provided for by the By-laws.

Moved by Mr. Clift, seconded by Mr. Dunlop, that there be a "Council of eleven," making Secretary and Treasurer two separate officers. Carried.

Moved by Mr. Doran, seconded by Mr. Dunlop, that this clause be added to the end of this article: "The Council shall have power to name Committees for special purposes." Carried.

ARTICLE VII.—It shall be the duty of the President to preside at all meetings of the Association and Council. In his absence the chair shall be taken by the 1st Vice-President, and in the absence of the 1st Vice-President by the 2nd Vice-President.

Agreed on unanimously.

ARTICLE VIII.—It shall be the duty of the Secretary-Treasurer to keep the minutes of the meetings and conduct the correspondence of the Association subject to the Council; to collect all funds and disburse the same on the order of the Council, when countersigned by the Chairman. In the absence of the Secretary or in the event of his inability to act, the Council shall have power to elect an assistant to supply his place *pro tem.*

Moved by Mr. Clift, seconded by Mr. Bulman, that this article be made to read thus: "It shall be the duty of the Secretary to keep the minutes of the meetings in English and French, and conduct the correspondence of the Association subject to the Council; to collect all funds and hand them to the Treasurer, taking his receipt for the same. In the absence of the Secretary, or in the event of his inability to act, the Council shall have the power to elect an assistant to supply his place *pro tem.* It shall be the duty of the Treasurer to receive all funds, giving a receipt for them to the Secretary, keeping proper accounts of the same. All disbursements to be made on the order of the Council when countersigned by the President and Secretary." Carried.

ARTICLE IX.—Two Auditors shall be appointed at each annual meeting to audit the books of the Association and report at the next annual meeting.

Agreed on unanimously.

ARTICLE X.—Should any member fail for one year to pay his dues, the Council may at its discretion drop his name from the roll after due notice, and he shall be re-admitted upon payment of all arrears.

Agreed on unanimously.

ARTICLE XI.—Should any charge of professional misconduct be made against a member, it must be in writing and signed by the person making it. The Council at its next meeting must take the matter up, but if the majority of the entire Council find the charge frivolous it shall drop. If the Council decide to futher investigate, two weeks notice shall be sent to the incriminated member with a copy of the charge against him, and he shall be given an opportunity to be heard in his defence. If the Council, by a full majority, find the charge substantiated, they shall at their discretion censure the offending member or demand his resignation, and in the latter case, if the resignation be not forthcoming within one week, the said member shall be expelled. The Council may also take cognizance of, and deal in a similar manner with, conduct on the part of any member derogatory to his professional character when the same shall be of public notoriety, even though no special charge may have been made. The decision of the Council in all such cases shall be final and absolute, and shall be communicated to the Association at its next meeting.

Agreed on unanimously.

ARTICLE XII.—The Constitution may be amended by a two-thirds vote of the votes cast at any annual meeting, or at a special meeting called for the purpose. Notice in writing of such proposed amendment must be given to the Secretary not less than thirty days before the meeting. The Secretary shall transmit a copy of such notice to each member of the Association at least fifteen days previous to the meeting. Any member who from unavoidable circumstances is unable to attend a meeting of the Association at which it is proposed to amend the Constitution, may vote by proxy. The authorization to vote by proxy must be made in writing on a form prepared for the purpose. Such authorization must be made within one month of the date of the meeting.

Agreed on unanimously.

This finished the discussion on the Constitution, which was adopted as amended.

BY-LAWS.

SECTION I.—The Annual Meeting of the Association shall be held on the second Thursday in September, or at such other time as the Council may appoint. At this meeting the annual report shall be submitted together with the Treasurer's statement of accounts duly audited. The place of meeting to be determined at the previous annual or at a general meeting by a majority of members present.

Moved by Mr. Perrault, seconded by Mr. Doran, that the annual meeting of the Association shall be held on the 2nd Thursday in September, "or at," etc. Carried.

SECTION II.—A special meeting of the Association may be called at any time by the Council, or upon a requisition to the Council signed by ten members in good standing. Fifteen days notice of special meetings shall be given to the members. The business to be considered at such meeting to be stated on the notice. None but members shall be allowed to vote at any meeting of the Association.

The Council shall meet quarterly at such time and place as may be agreed upon. Special meetings may be held at any time on the call of the President, or on the requisition of three members of the Council.

Agreed on unanimously.

SECTION III.—Fifteen of the members shall form a quorum for the transaction of business at meetings of the Association, and five shall be a quorum of the Council.

Agreed on unanimously.

SECTION IV.—The meetings of this Association shall be conducted in accordance with "Todd's Parliamentary Practice."

Agreed on unanimously.

SECTION V.—At the annual meeting the officers and three members of the Council shall be elected by a majority vote. The other three members of the Council shall consist of the senior members of the Association who shall not have already served on the Council. Should the election, from any reason, not be held at the annual meeting, it shall take place at a special meeting held for that purpose. Vacancies during the year shall be filled by the Council from amongst the qualified members of the Association."

Moved by Mr. Clift, seconded by Mr. Doran, that the second clause be made to read thus: "The other three members of the Council shall consist of the three senior members of the Association who have been practising the longest space of time, and who shall not have already served on the Council." Carried.

SECTION VI.—All papers, books and other records shall at all times be open to the inspection of members of the Association.

The words "at all times" were unanimously agreed to be struck out.

SECTION VII.—The annual fees for the different classes shall be as follows: Members, $20; Student Associates, $5; Honorary Members, $10. Those fees to be paid not later than the day of each year. Members admitted subsequent to the period fixed by Article III of the Constitution shall also pay a registration fee of $50, and Student Associates a matriculation fee of $10. Members in arrears shall not be entitled to vote at the annual meeting.

Moved by Mr. Doran, seconded by Mr. Peachy, that this section be made to read thus: "The annual fees of the different classes shall be as follows: Members, $10; Student Associates, $3; Honorary Members, $5; those fees to be paid not later than the 1st January of each year. Members joining within the delay fixed by Article III of the Constitution, shall pay a registration fee of $10, and members admitted thereafter, $25. Student associates shall pay a matriculation fee of $10. Members in arrears," etc.

SECTION VIII.—The Council shall appoint each year a board of three examiners, who shall meet semi-annually at Montreal and Quebec alternately. Candidates as Student Associates shall be admitted by the Council if graduates in Arts or Science of any University in Her Majesty's Dominions, or of the Polytechnic School of Montreal, on registering their names with the Secretary and paying the matriculation fee. All other candidates shall present themselves before the Board of Examiners after having given one month's notice to the Secretary (accompanied by the matriculation fee), and shall be required to pass in the following subjects: English or French Composition, Arithmetic, Mensuration, Algebra, Geometry, Freehand and Linear Drawing. Student Associates who shall have served five years with members, shall be admitted as members on passing the final examination in the subjects to be prescribed by the Council. The Council shall admit to membership all members of the Royal Institute of British Architects, also members of Associations of Architects of the sister provinces on their presenting themselves with their credentials. Architects not members of these Associations, who shall have practiced for five years, shall be admitted without serving as students, but shall be required to pass the final examinations. Registration fees must be paid to the Secretary previous to the final examination, but one-half will be returned to unsuccessful candidates.

Moved by Mr. Doran, seconded by Mr. Taylor, that the clause reading: "The Council shall admit," etc., be made to read thus: "The Council shall have power to admit to membership all members of Associations of Architects in the sister provinces, also members of the R.I.B.A. and of foreign Associations of Architects of equal standing on their presenting their credentials." Carried.

SECTION IX.—The Association may admit as honorary members such persons as are qualified by Article III of the Constitution who shall have been proposed at a previous meeting. The vote to be by ballot, one contrary vote in every five to exclude. One week's notice of proposals must be sent by the Secretary to each member of the Association accompanied by an initialed ballot. Members of the Council unable to be present may return the ballot sealed, which shall then be deposited with those of members present. No one shall be proposed as an honorary member without his consent in writing being signified to the Secretary. The form of proposals and ballots shall be prescribed by the Association.

Agreed on unanimously.

SECTION X.—The ordinary travelling and hotel expenses of officers and committees attending business meetings shall be defrayed out of funds in the treasury of the Association subject to the approval of the Council.

Agreed on unanimously.

SECTION XI.—The By-laws may be amended by a two-thirds vote of votes cast at the annual meeting, or at a special meeting called for the purpose. Notice in writing of such proposed amendment must be given to the Secretary, not less than thirty days before the meeting. The Secretary shall transmit a copy of such notice to each member of the Association, at least fifteen days previous to the meeting.

Agreed on unanimously.

This finished the discussion on the Constitution and By-laws. They were then unanimously agreed on as amended.

The Chairman then requested that the members present sign the roll book under the following heading, as moved by Mr. Clift and seconded by Mr. Bulman: "We the following architects practising in the Province of Quebec, do hereby agree to become members of The Province of Quebec Association of Architects, and also agree to conform to the Constitution and By-laws of the Association."

All the architects present then came forward and signed their names.

The Chairman announced that the election of officers would now take place.

It was moved by Mr. Clift and seconded by Mr. Doran, that Article 6 of the Constitution and Section 5 of the By-laws be suspended for this meeting only, and all the members of the Council for this year be elected by ballot. Carried.

The Chairman appointed Messrs. Stavely and Gendron scrutineers, and having a pressing engagement, was forced to vacate the chair.

On motion, Mr. Nelson was asked to take the chair.

To facilitate matters and hurry through the work, the Chairman elected two others scrutineers, viz., Messrs. Raza and Walbank, thus making two to each ballot.

The scrutineers reported to the Secretary and he to the meeting, the result of the balloting, when the following officers were declared duly elected:

President, J. W. Hopkins, R.C.A.; 1st Vice-President, F. X. Berlinguet; 2nd Vice-President, Victor Roy; Members of

Council, A. C. Hutchinson, R.C.A., A. F. Dunlop, R.C.A., A. Raza, A. T. Taylor, F.R.I.B.A., M. Perrault, J. F. Peachy; Treasurer, W. E. Doran; Secretary, C. Clift.

Moved by Mr. Taylor and seconded by Mr. Dunlop, that Messrs. J. Nelson and C. Baillairge be the auditors for the ensuing year. Carried.

Moved by Mr. Clift and seconded by Mr. Perrault, that we adjourn until 10 o'clock a.m. to-morrow (Saturday). Carried.

SECOND DAY.

The adjourned meeting resumed labor at 10:30 a.m., the President, Mr. Hopkins, taking the chair.

It was moved by Mr. Oulette and seconded by Mr. Perrault, that the place of next annual meeting be Quebec. Carried.

Moved by Mr. Clift and seconded by Mr. Hutchinson, that the Act of Incorporation be left to the Council, and that the Council be instructed to at once prepare an Act to lay before the Government. Carried.

Moved by Mr. Clift and seconded by the entire meeting, that the thanks of this Association be tendered the Province of Ontario Association of Architects and their Secretary, Mr. Townsend, for the assistance they have rendered us in the formation of ours. Carried.

Moved by Mr. Perrault and seconded by Mr. Staveley, that a vote of thanks be tendered Mr. Hutchinson and Mr. Nelson for kindly officiating as Chairmen at the present meeting. Carried.

Mr. Taylor then moved that this Province of Quebec Association of Architects having learned that it is the intention of the Montreal Board of Trade to throw the proposed new building open to competition, and that they have requested five architects in the States to send in designs, granting them $300 each towards their expenses, and that they propose throwing the competition open to all other architects without payment of any expenses, thus discriminating against the Canadian architects in favor of the five American ones, that this matter be referred to the members of the Council resident in Montreal to make immediate enquiries as to these facts, and take such action thereon as they may deem fit. Carried.

Moved by Mr. Jos. Verne, and seconded by Mr. J. Z. Resther, that the whole matter of competitions be left to the Council to take action as they may deem fit. Carried.

Moved by Mr. Perrault, and seconded by Mr. Dunlop, that we the Architects of the Province of Quebec now assembled in convention, being satisfied that the CANADIAN CONTRACT RECORD affords us direct communication with the contractors, *Resolved*, that we pledge our support to it by using its columns when calling for tenders. Carried unanimously.

Moved by Mr. Gendron and seconded by Mr. Lesage, that the thanks of this Association be tendered Messrs. Nelson, Taylor, Hutchinson, Doran, Dunlop, Raza, J. B. Resther, Clift and Hodson, the Organizing Committee. Carried.

Moved by Mr. Ouelette, and seconded by Mr. Perrault, that the minutes of this meeting be printed in English and French, and sent to every architect in this Province. Carried.

The President then asked if there was any further business to bring before the meeting. There being no response, the meeting closed by the visiting architects being invited to a drive and luncheon.

DRIVE AND LUNCHEON.

The drive around the city was very much enjoyed by all, but especially by the visitors from Quebec, who were thus given the opportunity of witnessing the rapid progress which Montreal is making and the handsome specimens of modern architecture lately erected or in process of erection. The luncheon provided by direction of the Montreal architects at the Windsor hotel, was of a character which left nothing to be desired. Considerable time was spent in discussing its merits, following which came the "feast of reason and flow of soul."

The Chairman: The toast which I now have the honor of proposing, is one which I am sure all our Montreal friends will drink with the greatest zest. We are very glad to welcome those who visit us on this occasion, and I think we happen to strike upon about as many genial men as we could possibly meet. (Cheers). In our proceedings, in the matter of professional etiquette, there has not been a hitch all through, and I think the greatest cordiality prevails, and I hope it may continue. Without any further comment, I give you, "Our Cofreres from Quebec." (Cheers, and singing "They are jolly good fellows").

Mr. Berlinguet, speaking in French, returned thanks on behalf of the members of the Association from Quebec. He expressed the hope that the society had been formed on a solid foundation. He called upon Mr. Baillairge to state to the assembly in English what he had said in French.

Mr. Baillairge: Mr. Berlinguet has just been addressing you in a very eloquent manner. He says that he is unaccustomed to public speaking. However, he seems to have acquired a command of language by attending meetings of the Board of Trade, and he and Mr. Peachy, as you will understand just now when you hear him, belonging to the city council, are able to express their thoughts fluently. Architects, as a rule, are not much given to public speaking. I sincerely thank you for the manner in which you have received this toast, and of course my feeling is participated in by all the Quebec members. I thank you heartily for the cordiality and princely nature of your reception. I think that the Association, as Mr. Berlinguet says, has been started on a good basis, and that it will increase in strength. Many of you may not be aware that about twenty-five years ago I formed one of a deputation from Quebec, and a meeting was held, I think in the Mechanics' Hall, with a view to form an association of architects at that time, but we were not successful. I suppose we were not numerous enough to combine. I feel satisfied that on this occasion our friends will be more successful. (Cheers). Mr. Baillairge then spoke in French.

The Chairman: The next toast is one that affects us all as a body. It is "The success of the Institution which we have this day inaugurated." I think we have done our work thoroughly, and as Mr. Berlinguet says, "the society has been established on a solid basis." I am in hopes that when we meet again, about this or any other festive board, we shall have the same feeling that we have done a good week's work, at any rate a very good day's work. I am sure that nothing will give all of us greater pleasure than to find that we are helping one another. It may induce a great many to join —perhaps not all—but I am of the opinion that it will show the younger men that there is something to be gained by pursuing a straightforward, honorable course, and I think it will be an incentive to them to study hard and fit themselves for a position which will not only be satisfactory to themselves, but which will make them respected by their employers and the public generally. (Cheers).

Mr. Roy commenced to speak in French, but on being requested to address the meeting in English, said: To speak in both languages is a difficult task for a French Canadian who is accustomed to speak only in his mother tongue.

Mr. Brown: Then talk in your father's language.

Mr. Roy: Or to speak in any other than his father's language either. I am greatly pleased to see how this new institution has been established in one day. We have managed to unite here nearly forty members of the profession, and the membership will increase rapidly in the future. (Cheers.) But do not imagine that our work is at an end when the Association is organized. Far from it. We are only commencing, and before next year is over, all our tariffs will be established on a good basis, all the measurements which cause so much annoyance to contractors and architects and proprietors, shall be settled on a basis which cannot be understood in two ways, which will put an end to all this trouble that has existed up to the present time. Our next work at the next annual convocation I should like to be the bringing about of a conference of all the architects on this side of the Atlantic. This may appear to some of you a difficult thing to accomplish, but the architects of Montreal can do it if they try, and I believe they will. It would have the effect of showing the public that on this continent the noble Association of Architects, which has been unknown up to this day, has become an important institution. We have now forty members; next year we will number seventy-five. With that membership we ought to be able to collect enough money during the year to invite most of the architects of this continent to a meeting in Montreal, the mother city of the Dominion. (Cheers.) Our Association would be the first on this side of the Atlantic to attempt such a thing. It would bring great credit to the architects of the Province of Quebec and it would unite all architects—American, English, French—architects of any nation, for I maintain that an architect cannot have a nationality. He does not gather his ideas here, he receives them from above. Mr. Berlinguet told you that he first derived his information from God, the Architect of the Universe, and then from Adam, but there is a third architect, whose name he forgot to mention—Noah. (Laughter.) To my mind the first real architect was Noah. It was he that first constructed a naval building.

A voice: That was a ship.

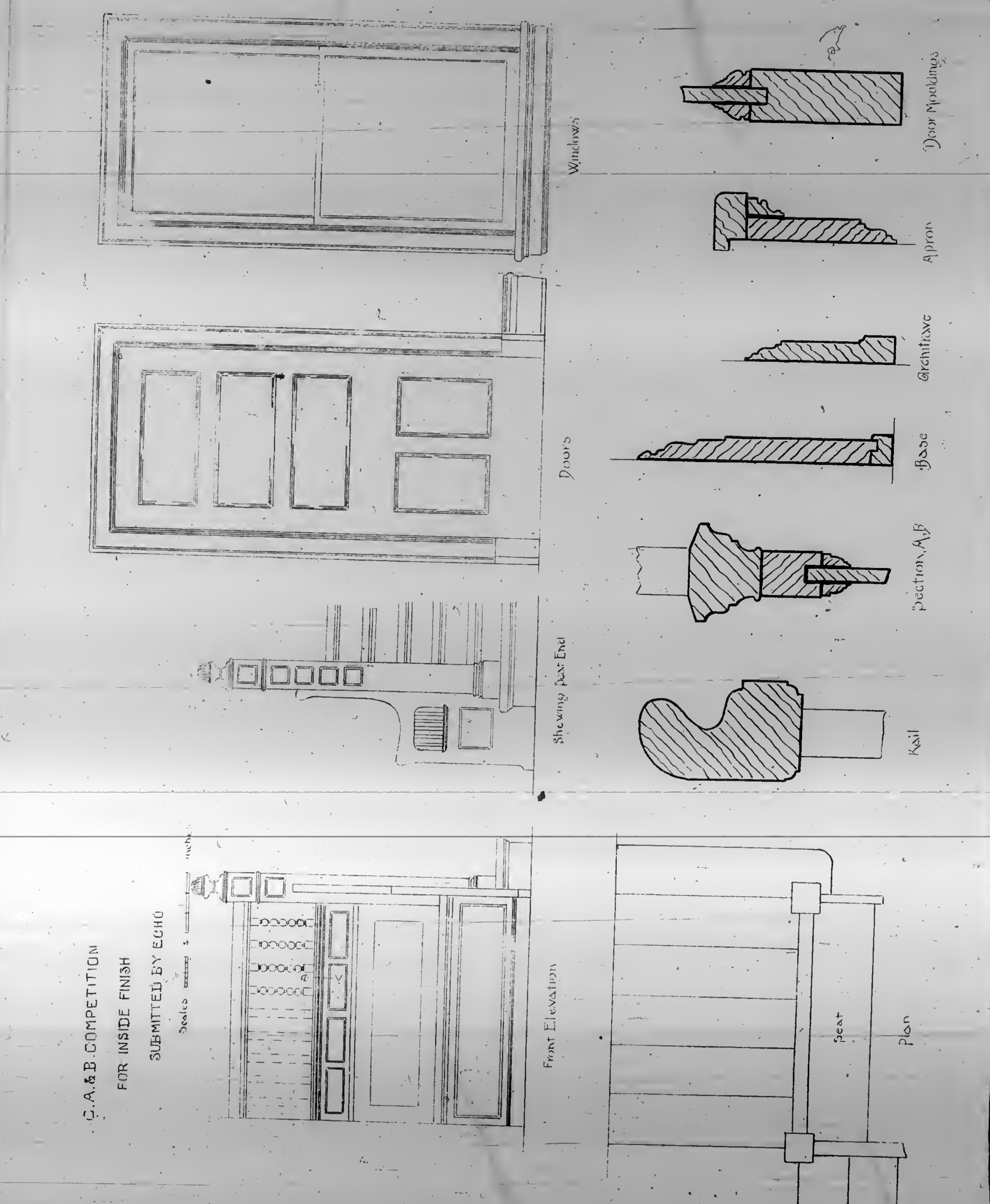
Mr. Roy: It was not a ship, it was a floating house.

Mr. Brown: He watered the stock.

Mr. Roy: I am delighted to see the architects of this Province say "unite," and to know that everyone of us is ready and animated by the same spirit and determined to achieve success. (Applause.) There can be no doubt that we will succeed; then we will establish the Association on a sound basis, and next year I hope we shall undertake to have a conference of all the architects on this side of the Atlantic. Success is certain if we are united, and it will be a credit to this city to hold the first international gathering of the kind. I thank you for your kind attention, and I hope we shall always continue to endeavor to increase our membership and to carry out the plans for which we have united.

Mr. Roy followed in French.

Mr. Hutchinson, R.C.A., on rising to speak was received with cheers. He said: I did not expect to be called upon to speak at this stage of the proceedings. I can only say that I feel very proud this day to see so many of our architects meeting together for a common object—advancing the interests of the architects and forming an Association for the advancement of all the interests connected with building. This it has been my wish for many a year to see, and I have talked to many of my cofreres about it in the past, but the time never seemed opportune until the present. Starting the Association as we have done, with such a large number of members, I think its success is assured. However, that success will depend a great deal on the members themselves, in working out the objects of the Association and getting into fair working order. There may be some friction at the outset, but I hope that members will drop anything that might appear harsh or personal to themselves, and do everything that they can for the advancement of the interests of the Association. (Cheers). While I look upon the formation of this Association as a most desirable thing in the interests of the profession, I think that among other things the bringing of us together as architects in a social capacity is one of the best objects that we could have in view. (Applause.) I have practiced my profession in Montreal for a number of years—not so many years as some of my confreres who are present, but a quarter of a century now, and this is the first time that I have met in a social capacity with any of my cofreres. I hope from year to year that we will meet in this social capacity and form friendships and make acquaintances among our members, some of whom we have hardly known to speak to before. I also look to another object that the Association should have in view, and it is one that I have had in my thoughts for some time as to how it should be brought about. In the formation of this Society I see some hope of that project being carried out. I refer to making provision for affording the means to young men to study the profession of architecture in Canada. (Cheers.) I mean to say specially, that up to the present time we have had no means of giving any young man who wishes to learn the profession, a systematic training. It is true that young men may enter the office of an architect and spend a few years there, and pick up a knowledge of drawing and of architecture as far as the means at his command will enable him to do so; but as to any systematic teaching, it has been completely ignored—in fact, there are no means of providing it. I know that I have time after time refused young men whose parents or friends have begged me to take them into my office, for the purpose of teaching them architecture. I have been obliged invariably to refuse, for the simple reason that anyone actively engaged in the profession as I am has no time to teach. For my own part, however much I might desire to teach—and I may say that I would be very glad indeed to teach the art—it would be utterly impossible for me to do so and to carry on my business, and for that reason I have invariably refused to take any young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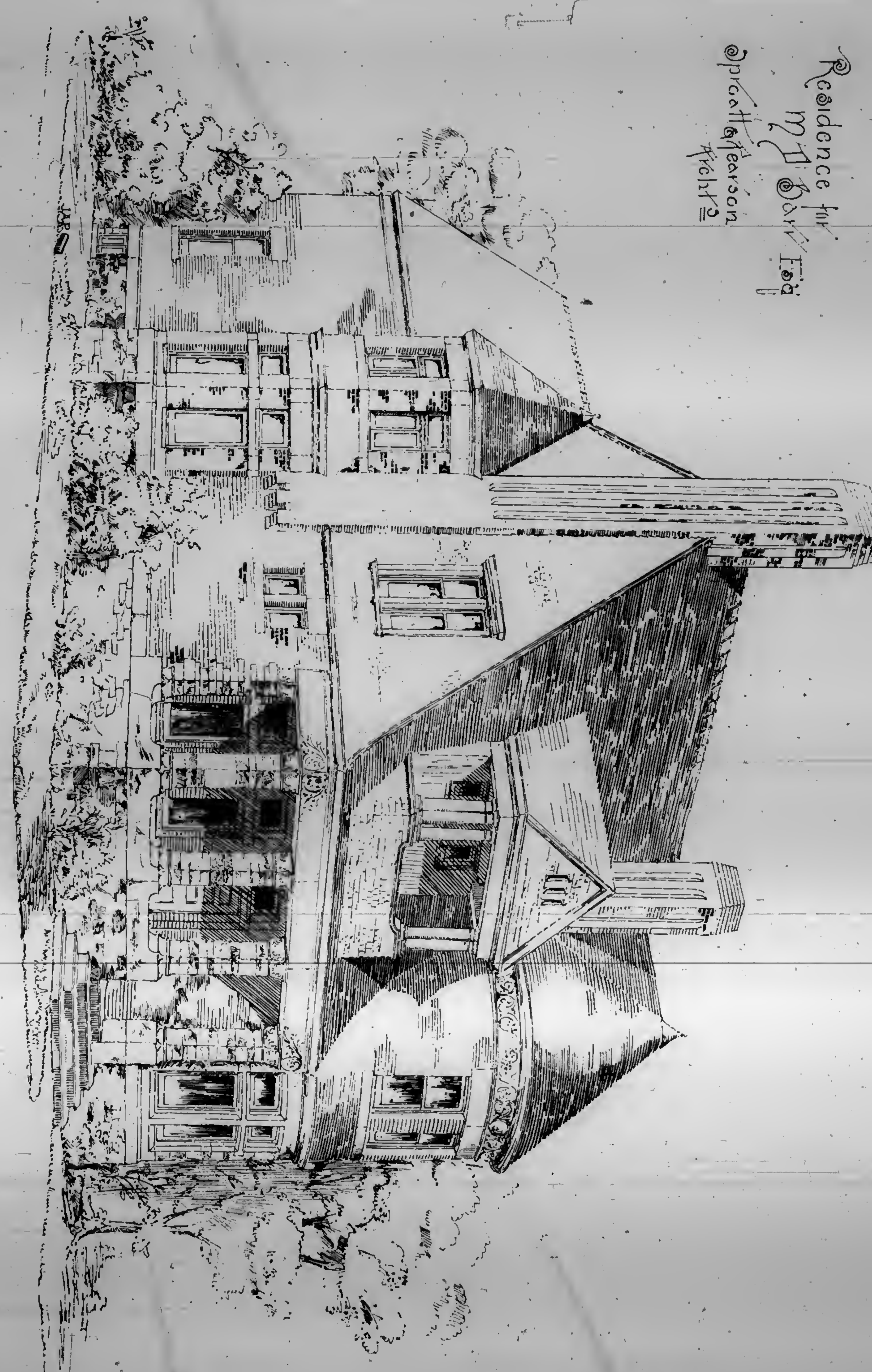
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man into my office with the idea that I would teach him architecture. What could I do? Nothing! And none of my cofreres would do any better than I could myself. I have often advised young men who wished to acquire a knowledge of architecture, to go to the United States and obtain an education there, because they could not obtain one in Canada. I have advised young men to go to Boston and other cities in the United States, to receive an education which they could not get in Montreal. It should be one of the early objects of the Association to establish some means of founding a college or providing other ways of giving young men a systematic training in architecture, and until that is done, our profession will never be what it should be. It is true we have a College of Technology in Montreal, but I do not think architecture forms any part of the subjects taught there. It might be made part of the course, and now that our McGill College here has, through the munificence of some of our citizens of Montreal, been so largely endowed in the Science Department, and where there are so many subjects that would be common between architecture and engineering, I hope the time is not far distant when we shall have a Chair of Architecture or lectures on architecture in connection with the Science and Art Departments. (Cheers.) Independent of the other benefits to flow from the formation of an Association such as this, I look upon that as being one of the most important—the establishment of some means whereby our young men can obtain a proper education in architecture, and I shall do my best, Mr. President, to carry out this object when it comes before us.

Mr. Brown: Mr. President and gentlemen,—In the outstart I may as well say that I have had nothing at all to do with the amalgamation of these Societies, but I have a few words of advice to give them. First of all, I am only too pleased to see you gentlemen gathered together here around one table. I never expected to see so many sit at the same table, joining in one idea and embracing each other's thoughts. The great trouble with the profession in Montreal—I am sorry to say in Canada—is animosity and jealousy. I, as one of the senior members of this profession, have nothing to say about it. I have been tampered with, but I laughed at it all. The young members of this Association have a lot to learn. They have to learn this that they have got to join their seniors in carrying out the different works, instead of making fun of their seniors. I am very sorry to say that I have seen a good many members at this Board appear in court, in cases where I have been obliged to sue for payment of my professional services, and swear that my services were worth nothing; but the judge told them that they were only swearing to their own opinions and not the value of my services. I hope that this Association will be the foot-stone to an architectural monument that will be lasting for our time at least. (Applause.) I hope that we will not be content merely to gather together at the table, where the fruits and the grand things of the time to come will be spread before us, but that we will meet together for mutual benefit and instruction, because neither you nor I can do without the other. We are all members of the one family now—not as we have been, members of different branches. I hope, gentlemen of my profession here, that you will look forward to the promotion of a noble cause, that you will harken to the advice of those that surround you, and that you will take many a hint from those that can aid you, and that you will give hints to those who may require them. There is a great deal to be done, and it seems to me there is a field large enough for us all. I hope we will join hand in hand, under one flag, and that we will, by mutual understanding, agree upon one point—that we are architects on one basis and with one thought and one idea, and that is, that we support each other at any time we may be called upon to do so. (Cheers.) I have seen for years past, as Mr. Baillairge has said, the need of a Society like this. I have reluctantly thought that it never could be formed, because as I have said, jealousy is a strong feeling amongst us all; but, I repeat, there is room for us all, and room for five hundred and a thousand more in Canada if we will form one band and work together successfully in one cause. The great trouble and dissention amongst the architects in past days, has been to vie with each other as to how much more work one would do than the other for nothing, and how much they might do to try and keep others from getting employment. I have opposed from the first and I still oppose—I might as well tell the members of the Association who are present—entering into any competition whatever, unless each professional brother is paid for his ideas. (Applause.) I for one am willing to sign a document, adhering to my views, that I will enter into no competition unless those that enter into it with me are paid the same as I am paid, and then that a professional brother will be selected as an expert to decide which is the best design. (Applause.) In doing this, it is not because I expect I will be the successful competitor, but because I am willing to bow with due deference to the decision of any one that this Association will appoint, and it is with the idea of giving the public of Montreal to understand that the architects of this province have brains which they are not willing to have doled out as though they were so many scavengers expecting work. I received a notice the other day to enter into a competition, and they calmly told us that they had selected the leading architects of Montreal. I think they should have stated that they would pay the leading architects for their trouble, and would appoint a leading architect to decide as to which design was best. I do not think that they should select some one who, if presented with a sketch of a dog and a little child on a footpath, for instance, will turn it upside down and adopt that design. I for one want to enter into the competition with my brethren on fair terms. There is to be a competition shortly in Montreal and I was waited upon and asked to enter into it. I said, "I am willing to enter into competition on one condition, and that is, that the design which may be adopted shall not exceed ten per cent. on the estimates." They said, "would it not be better for the architect to carry out the design for the man employing him?" I said, "No, the man of genius who is competent to prepare such a design, is not a contractor." They should not be under the thumb of the general public. I wish this Association to understand that if any man wishes to retain us, that we will endorse what the charges will be, and that we will hold to each other and let them know that we have a claim for our ideas and for what we have to go through—for the experience that we have dearly bought. All that a young man has to do now-a-days to become an architect is to enter an architect's office and then after three or four months experience he hangs up his shingle and professes to be an architect. I, as one of the profession, protest against this. I say that anyone who wishes to enter this Association should have studied in an architect's office for at least five years, (cheers) and even five years, I may as well say, is a very short term. Although I am a comparatively young man, I have been over thirty years practicing in Montreal, and I know that I have a lot to learn about the business yet, but the young men think they have nothing to learn and can teach their superiors. I shall be glad to have this institution established at once, and a class of instructors as Mr. Hutchison suggests, and that each one of us should take his term—say a fortnight or a week—and train these young men who have talents, and who show some capacity for the business and let them understand how much they have to learn, instead of letting them go away with the idea that they know as much as they think they do. The longer we live, the more conscious we become of the extent of our own ignorance. As an architect I may say that there are several clauses in our law which are immensely injurious to us. One is that a contractor and an architect are placed on the same basis, in reference to anything that may happen during the construction of a work. Some contemptible proprietor who expects to put up a building for nothing, employs an architect of some standing; he will not give him sufficient means to carry out his design, and being a young man, the architect naturally dislikes the idea of losing the work. Nevertheless, he is held responsible for that work for ten years. The law should be repealed at once, and I think that this Association will have sufficient influence to have that law removed or amended. (Cheers.) In reference to strength, I consider that unity is required, and I agree with Mr. Roy when he says that not only the architects of Canada, but the profession throughout America should go hand in hand—should unite as one man and let the world know that we are not divided—that we are not the "spalpeens" that we are supposed to be. Let us show them that the architects are an educated class. I contend that no architect can be fitted for his profession unless he is educated, because wherever art is appreciated, education must come in first. We know perfectly well that it takes a lifetime of study to make an architect, and when a man becomes an architect, his services should be appreciated. Instead of being domineered over by a certain class, we can, by standing together, take such a position as we have never yet held in this country. I am glad to see my Quebec brethren here, and to know that they are joining with the profession in Montreal, heart and hand, and uniting for the purpose of advancing the interests of the profession. This is the first gathering of this kind that we have had, and I hope the longer we live the more thoroughly will we realize that this Association is doing good, not only to its members, but to the profession at large throughout Canada. (Cheers.)

Mr. Doran: Mr. Chairman and gentlemen—Rising after so many of my seniors I feel at a loss to know what to say, but I must begin by stating that I heartily endorse everything that my cofreres have said—firstly, that we have commenced upon a solid foundation; that being assured, I think we need have no fear of the ten years law as regards the stability of our institution. (Cheers). I think none of us will be afraid to guarantee its stability, provided we go on in the same spirit in which we have commenced—provided we carry up the structure from the foundation, cemented by brotherly union and cemented by the proper professional spirit, one which will recognize that there is a field for us all, that we are engaged in the same noble task, and all take our inspiration from the great architect of the Universe—that profiting by the world's hostility in the past, we are prepared to go forward. It is necessary also that we should provide for the education of our younger brethren, of those anxious to join the profession, in order that they shall become worthy members of a noble profession. I say also that it is necessary to go further. A great object has been attained merely in the formation of this Association, merely in the drive through the streets today, small as it may appear to be. It has excited a certain amount of wonder and comment. The question will be asked "who are these?" I hope the words will be "who are the gentlemen that compose that distinguished body of men?" (Laughter). The answer will be, it is the architects of Montreal and Quebec who have met together to form an association. The public has a great deal to learn as to what constitutes an architect. In a young country like this, where there are no dilletantics in the art, and the public do not understand that architecture is an art and profession at the same time—do not understand that it requires a rare combination of the artist and business man. The artist is responsible not only for the artistic and the scientific character of his work, but he has also to be a man of business, to understand the ways and means of things and the necessities of those for whom he has to think—that he has to be, as it were, a Father Confessor to the world at large. The trouble is that people do not as a rule understand what an architect's duties are. I have had clients of mine come in and haggle about fees, and after they saw the amount of work and responsibility thrown upon me they have said, "I did not know you had as much trouble as that; I had no idea that you had so much work to do. I thought it was a simple matter—merely to make out a preliminary sketch, and that your work was then done, and I was under the impression that you were an exorbitant fellow to charge me $100 for a thing like that. I had no idea of the responsibility there is on an architect." It is necessary that we should educate the public as to what an architect really is, and then there will be no trouble in establishing a tariff. The tariff will come by the good sense of our patrons, who will understand that it is better to pay a fair compensation and get full value for their money. Let them understand that the architect is not paid merely for his plans. Some of our clients often want to claim the plans when the work is done; they say "I paid for that plan and it is mine." Let such a man understand that he is not paying for a plan, but that he is paying the architect for knowing how to make one. They are merely paying the man who knows how, paying him for the results of a lifetime of study, because I say it takes a lifetime to learn not only architecture but to become proficient in any profession, and every true architect is learning all the time. When the Association is properly formed as it has been to-day commenced—when it ceases to be in a chaotic condition, the public will understand what the profession of an architect is. They will learn that it is not merely necessary for a man to know how to draw a plan—because many a school boy can do that—that does not constitute an architect. When they know what work an architect really has to do they will then be satisfied, as I say, to pay a man not only for what he does—which is merely his tools to show what he has conceived in his brain—but to pay him for knowing how, and to reward him for the lifetime of study he has devoted to his profession. This I think our Association will in a great measure succeed in doing, and the oftener we meet the better we will become recognized; the more we impress on Governments and Corporations and individuals the importance of our work, the better our standing will be. Even in our fair city of Montreal the idea prevails that all that is necessary to be done to put up a building is to set a lawyer at work. The lawyers will have to recognize that there is a part of jurisprudence belonging to our profession as much as medical jurisprudence belongs to the medical profession. Until we respect ourselves we cannot expect the public to do so. Our friend Mr. Brown mentioned to-day in private conversation—and I am sorry that he did not make the same statement in his remarks just now—when asked about his nationality, that he was half American and half Irish, and that he had the American capacity for blowing. (Laughter.) We must all learn that, and we need not go to our neighbors to the south for it. When we establish this College of Architecture, I propose that Mr. Brown shall give the lessons (laughter), and when we have blown our horn sufficiently to let the public understand what constitutes an architect, the profession will cease to be deserving of the remark that was formerly made about school teaching in England. In the old country it became a proverb

at one time that when a man was fit for nothing else he might turn school master. In Canada when a man is fit for nothing else, it is supposed that he can turn architect. When we have blown our horn and blown it long and loud, we need care for no ten year law. An American friend said to me once, "You architects can knock a hole through anything in the way of a building." I said, "If we cannot knock a hole through anything there is no use in our trying to make something that nobody else can knock a hole through." These projects which have been suggested are all in the bud—I mean the project of having a chair of architecture in McGill College, and a course of lectures on architecture. When the Association is established it will enter into the head of some plutocrat that the best thing he can do with his money is to endow a chair of architecture. We can go to the Local Legislature and to the Dominion Government and say, "Why are we behind the rest of the world? Why do you not make tests of our Canadian woods and stones? How is it that we can tell the crushing weight that European and American stones will stand, and do not know anything as to the qualities of our own building material? Throw open your library at Ottawa, at least the few works on architecture that you have there, for the benefit of architects throughout the country and not keep them there merely for the use of members of Parliament who never look at them. You need never look abroad for talent; you have enough of it in Canada if you utilize it." As Mr. Hutchinson has remarked, those who study the profession in Canada are necessarily self made men. When we have such advantages as those which may be found in other countries, the day will come when the petty jealousies which have been spoken of to-day will cease. When we have a basis of union we will unite, but as we were before, our seniors must not blame us for the disunion and animosity that prevail. When we had no grand object to draw us together, we quarreled among ourselves about petty things. Let us hope that a bright day is dawning for the future of architecture in the Dominion. I beg to thank you for the attention with which you have listened to my remarks. (Applause).

Mr. Perrault: I propose, in revenge for the motion that I lost yesterday, when I proposed that we should have twenty instead of fifteen, that we can reach the twenty just as well this year by having our photographs taken and sent to the Secretary who, if you adopt the idea, could have a group picture made by Notman. It could be done just as well in that way as to photograph the group, and it would be a souvenir worth preserving. It could be kept in our offices or private rooms, and it would show that we are not merely individual architects, but that we are members of one large family.

The toast of the President, Mr. Hopkins, was then given.

Mr. Hopkins, R.C.A.: Gentlemen, I assure you that I find it difficult to return thanks in proper terms for the very cordial manner in which you have drank my health. Though an old man in years, this is the first time that I have sat at the head of a table in this capacity, and anything I say must be taken with a certain allowance for my inexperience. As I have already told you, I am willing to do all I can to further the objects of the Association. I would much rather that the choice of President had fallen on some one more able to fill the position. (Cries of "no, no.") I know that my antique face and long connection with the profession in Montreal has had something to do with the selection; at the same time I feel as much flattered as if I were a young fellow getting his degree. I shall never forget it, and I shall always point to it with pride when I speak of my career to my children. I have a son following the profession, and it will be an ambition for him to hope some time to fill the same position. It was totally unsought by myself, and I can hardly find words to express the kind feelings that I have towards every gentleman at this table. This meeting has brought us together. I have made the acquaintance of many whom I had not known before, and of some whom I had only met casually. As Mr. Hutchison has said, we have not been thrown much together in the past; there will not be the same excuse if the same should be said in the future. We must meet from time to time, and I hope that the same good feeling which has prevailed at this meeting will exist at all our gatherings, whether for business or otherwise. Enough has been said by those who have preceded me as to how the Association should be carried on and what should be done to promote the interests of the profession, with all of which I heartily agree. I thank you very much for the hearty manner in which the toast was proposed. Permit me to propose a toast which occurred to me yesterday: We often drink "to absent friends and ships at sea." With this toast I wish to couple the name of an old cofrere, who through ill-health has had to leave the city for a time—I allude to Mr. Steele. (Applause.) I only hope that the sojourn on the other side will re-establish his health. He has that about him which will make a long life honored. I hope that Mr. Hutchison in writing to him, will mention that he was not forgotten at our meeting. (Cheers.)

A. T. Taylor, F.R.I.B.A.: Mr. President and gentlemen of Quebec and Montreal, my professional brothers: I think you have had enough speechifying to-day without listening to anything that I could say. What I should like to have said has been much better said than I could state it. The field has been well covered. I join in congratulating the meeting on the success of our first annual meeting and the launching of this Association. I have felt, in common with all of us, that we have been far too much apart. We have all been like stars shining each in his own sphere—spheres of the first magnitude, no doubt, but still apart. We have been brought together now, and I hope we shall be able to shine in a glorious constellation, making such an illumination as will make Canada the brighter and better for our work. (Applause.) I have listened with pleasure to those who have said that they hoped all jealousies and ill will would disappear. That has been the bane of our professions. I trust from this time forward you will all join in a loyal comradeship, and will do everything you can to advance the interests of architecture. We must not say that we are of Quebec and you of Montreal; architecture is above and beyond all cities. We must not say, "I am of one nationality and you are of another"; architecture is above and beyond all nationalities. (Cheers). We must not say, "I am of one language and you are of another," because architecture has a language of its own, and had a language before spoken or written language had appeared. I trust we shall be able to join together, sinking all our petty differences, and show to the public that we are comrades standing shoulder to shoulder, and advancing hand in hand. The Dominion of Canada is large enough for all our efforts. We hope to see the time when from the Atlantic to the Pacific this country will be studded with noble buildings. We are the men to do it.—We do not need to go across the border or across the Atlantic to find men for the work. We are just as well qualified, or ought to be as well qualified, as they are for our work. We have the noble examples of the past, all the noble works of the Greeks and Romans, and of the Goths and of the Renaissance. Why should we not profit by such examples, as well as others of the present day? I hold that we can, and it is our duty to show to the public generally that we can. We have not only our own honor to conserve, but we have the honor of each other and of the Association to uphold. I trust it will be a thing of the past when any of us will attempt to underrate or detract from the reputation or good name of any member of the Architects' Association. I have listened with the greatest pleasure to those who have spoken as to what is needed in the way of training our young members. I have tried for some time to have something done in this direction. I have brought the subject to the notice of the governors of McGill College, and tried in every way to get a chair of architecture established there. I hope the influence of this Association will be sufficiently powerful to bring that to a successful issue, and that we shall be in a position to train our young men here without having to send them abroad for an education. I will not trouble you further, but thank you for the honor you have done me, and hope that we will have many pleasant re-unions such as this. (Cheers.)

Mr. Hutchinson, R. C. A.: I should like to propose a toast. We have said a great deal about the success of the Association, but I think there is another society whose success is bound up in ours and ours in theirs—I refer to the Ontario Association of Architects. Of course they have taken the lead in the formation of a society in Canada. They are much larger in numbers than we are, but I hope that the two societies will be found working together in harmony, with the object and aim of eventually amalgamating together in one Dominion Association. That is the object that we should try and work for. Canada is not a bit too big to have one Association, and I hope that one of our objects will be to bring about the union of the two Associations into one grand Dominion organization. I therefore have great pleasure in proposing the health of the Ontario Society of Architects, and just couple with it the wish that the Secretary would intimate to them the expression of our good wishes, of our respect for them, and the hope that we will co-operate together for the promotion of the interests of architecture. (Loud cheers).

Mr. Roy: I perceive that we have almost forgotten one of the principal toasts of the day, that is to the Committee on Organization, which, as you all know, has merited from us all our unqualified thanks for the work that they have done in bringing together and organizing such a large number of architects for the first time. I call upon Mr. Nelson to respond.

Mr. Nelson, R. C. A.: I beg to thank you, on behalf of the Committee of Organization for your kind remembrance of us. Speaking for the absent ones as well as for myself, I may say that we had a good deal of work to do. It was done with great pleasure, and I am very happy indeed that it has resulted in the organization of the society. I agree with almost all that has been said so ably by those who have preceded me, and I will not take time further but thank you for your kindly recognition of the services of the Committee of Organization.

Mr. Dunlop, R. C. A.: Gentlemen I have great sympathy with this Association. It has been a very sore point with me, coming to Montreal as I did from the States, after I had served my time, to see that architects coming as strangers to this city were looked upon as interlopers. When I went to Detroit a young man, though unknown to the architects there, I was received with open arms by the Detroit Association. I hope that this Association will extend a welcome to all comers who have the interests of architecture at heart, as that which I received at Detroit. The architectural profession is different from almost any other profession in the world. It is one to which no man can be educated unless he is born an architect. I hope that this chair at McGill College which Mr. Hutchinson has spoken of, and also a French chair at Laval Institute, will soon become a fact, and that we shall call on the Quebec Government to assist the project. (Cheers). Moreover I would say that the architects who are present here would all be willing to subscribe to a chair, and if there should be competitions, that we should subscribe so as to enable students to have the privilege of studying free if they should be winners. The architects of Montreal have been looked down upon, and I think it is time that they should assert their dignity. I for one would be willing at any time to subscribe to establish a chair at McGill for the advancement of the interests of architecture, and I would also suggest that the Association should form a library, and the citizens of Montreal should be asked to assist them in establishing it, to enable students to have the best facilities for studying their profession. I know the disadvantages that we labor under in Montreal. In Europe and in the United States students have a great advantage over Canadians. Canadian architects are in a lower position than their brethren in the neighboring country, not because they have less talent, but because they have not such good opportunities for studying. I would suggest that the Council should take that subject into their serious consideration in order that students may be given every possible opportunity to educate themselves and become eminent architects, which I have no doubt many Canadians have the brains to become. (Cheers).

Mr. Peachy followed in French.

Mr. Perrault: There is one toast that we have overlooked. If we want to succeed, we must give time and means to accomplish the result, but that is not enough; we must make known to the world what we are doing. I therefore propose "The Press of Canada," represented here by the CANADIAN ARCHITECT AND BUILDER.

Mr. Mortimer, the representative of the CANADIAN ARCHITECT AND BUILDER, responded, wishing the Association a long and successful career.

The visitors having to leave the city by the evening boat for Quebec, the luncheon was brought to a close by the singing of "Auld Lang Syne" and "God Save the Queen." The visitors were accompanied to the boat by the President, the second Vice-President, and Messrs. Dunlop, Perrault, Resther, Doran, Clift Daoust, Venne and others, who gave them "three cheers and one cheer more" as the steamer left the wharf.

PERSONAL.

A meeting of the Canadian Society of Civil Engineers was held at Montreal recently for the purpose of presenting a congratulatory address to the President, Sir C. S. Gzowski, who recently had conferred upon him by the Queen the Order of Knighthood. The proceedings terminated with a dinner at the St. James Club.

The architectural firm of Hutchinson & Steele, Montreal, has been dissolved, owing to Mr. Steele's ill-health, and his determination to reside in England for the future. Much regret is expressed at his departure from Montreal, and at the circumstances which have rendered it necessary. A pleasant feature in connection with his removal, however, was the presentation to him by Mr. George Roberts on behalf of the city contractors, of a gold watch, chain and pendant bearing a suitable inscription.

QUEBEC.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

THE designs received in competition for the proposed new City Hall number seven, four of them being contributed by local architects. The Road Committee, who have the matter in charge, will shortly appoint three experts to examine and report on the various plans submitted.

The Fortress Hotel Company's invitation for competitive plans for their new building has brought out four competitors. A sub-committee of three directors has been named to examine the plans and report to a meeting of the full Board at an early date. American as well as Canadian architects are represented in this as well as the first named competition.

The work of extending the water and drainage systems of the city to the newly annexed wards formerly comprised in the municipality of St. Sauveur, is being actively carried on. The work is in charge of Mr. Chas. Baillairge, City Engineer, with Mr. J. Gallagher as assistant engineer, and Mr. Andrew Hatch, chief foreman. The principal main is a 12" one, fed from both the 30" and 18" mains from Lorette, from whence the city supply is obtained, 8 miles distant. Either or both of the mains may at will be connected with the 12" pipe. Distributing mains of 8", 6" and 4" are being laid through the side streets—very little of the latter size being used. These distributors are supplied by four intersecting 8" mains. Stop cocks are so arranged as to shut off but a small portion of any part of the wards in the event of repairs being made. About 100 two branch post hydrants are being placed so as to secure adequate fire protection. The iron pipes are of Canadian manufacture, and are being supplied by Messrs. Drummond, McCall & Co., of Montreal.

The main drain is built of brick, and is oval in section, 3' 9 in. high and 2' 6 in. wide. Into this are connected 18 in., 15 in. and 12" branch drains made by the Standard Pipe Co., of St. Johns, P. Q., and furnished by G. M. Webster & Co., of this city. All the work (except the main brick sewers and all excavations) is being done by the corporation by day's work, this, from past experience having been proved to be the better way to secure good work at a moderate cost. It is expected the cost will be about $250,000 for the entire system. The population of the two new wards is about 22,000.

The travel this year to the great fishing lakes in the lake St. John district has been so great that the hotel at Roberval, the terminus of the road, has been found entirely too small, consequently the proprietor, Mr. H. Beemer, has decided to add two wings, three stories in height, 103 feet long and 37 feet wide, giving 95 additional bed rooms and a long dining room of 70 x 35 feet. In addition, there is also to be a billiard room and a bowling alley. The whole frontage towards the lake will measure 174 feet, and towards the railroad 103 feet. The plans have just been completed by Mr. Stavely, architect. The work will be done by day's work.

Mr. J. Y. Peachy, architect, has now in hand the various works required in the completion of St. John's Church, including the plastering of the interior, new pews, etc., the congregation hitherto having been obliged to use the church in its unfinished state owing to lack of funds. The cost of the present undertaking will be about $40,000. This church it may be remembered was destroyed in the great conflagration of June 8th, 1881, when a large part of St. John's ward was burned.

There is a great dearth of plasterers here. All work in that line proceeds in an extremely slow way. Good hands are receiving $3 per day.

It is expected that a general meeting of all architects practising in the Province of Quebec will take place in Montreal on October 10th to form a Province of Quebec Architects' Association, the preliminaries thereto having been agreed upon by correspondence between the architects of Montreal and Quebec.

The offices of the Toronto Pressed Brick Company have been removed from the Quebec Bank Chambers to No. 52 Adelaide St. east, ground floor.

The Adamant Manufacturing Company's premises in Toronto were again visited by fire last month, and their stock damaged to the extent of about $1,500. The effects of the occurrence having been overcome, business is again being proceeded with as usual.

The incorporation is announced of the Richmond Slate Quarrying and Asbestos Company, of Richmond, Que., capital stock $150,000, to manufacture roofing slate, slabs, and other products of slate, clay, asbestos, etc.

Incorporation has been granted the British Columbia Pottery and Terra Company, Victoria, B. C. New machinery has been ordered and new kilns are being built. The company will manufacture sewer pipe, flower pots, drain tile, chimney pots, tiles, terra cotta, etc.

Mr. F. J. White, of London, Eng., proposes to organise a company in Canada for the manufacture of a new kind of brick, the patent of which he is said to have sold in the United States for $750,000. This brick, which is styled granite, is manufactured from silica, resembles marble, has a very smooth surface, and can be highly polished.

Accepted Design for Sun Life Assurance Co.'s New Building, Montreal.

Robert Findlay, Architect, Montreal.

CANADIAN ARCHITECT AND BUILDER

FINE AND INDUSTRIAL ARTS · DECORATION · FURNISHING
CONSTRUCTION · SANITATION · ENGINEERING

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—THE—

CANADIAN ARCHITECT AND BUILDER,

A Monthly Journal of Modern Constructive Methods,

(With a Weekly Intermediate Edition—The CANADIAN CONTRACT RECORD),

PUBLISHED ON THE THIRD SATURDAY IN EACH MONTH IN THE INTEREST OF

ARCHITECTS, CIVIL AND SANITARY ENGINEERS, PLUMBERS, DECORATORS, BUILDERS, CONTRACTORS, AND MANUFACTURERS OF AND DEALERS IN BUILDING MATERIALS AND APPLIANCES.

C. H. MORTIMER, Publisher,

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TEMPLE BUILDING, MONTREAL.

SUBSCRIPTIONS.

The CANADIAN ARCHITECT AND BUILDER will be mailed to any address in Canada or the United States for $2.00 per year. The price to subscribers in foreign countries, is $2.50. Subscriptions are payable in advance. The paper will be discontinued at expiration of term paid for, if so stipulated by the subscriber; but where no such understanding exists, it will be continued until instructions to discontinue are received and all arrearages paid.

ADVERTISEMENTS.

Prices for advertising sent promptly on application. Orders for advertising should reach the office of publication not later than the 12th day of the month, and changes of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The "Canadian Architect and Builder" is the official paper of the Architectural Associations of Ontario and Quebec.

The publisher desires to ensure the regular and prompt delivery of this Journal to every subscriber, and requests that any cause of complaint in this particular be reported at once to the office of publication. Subscribers who may change their address should also give prompt notice of same, and in doing so, should give both the old and new address.

MUCH has been done of late in the direction of improving the roadways and sidewalks of Toronto, much more still remains to be done. Nowhere does improvement seem to be more conspicuously necessary than in Queen's Avenue. For many years an old cement walk, full of great cracks and holes, the result of the action of frost, has been allowed to remain on this prominent thoroughfare, as a mark of discredit to the city. It is to be hoped another summer will not be allowed to pass without seeing the roadway asphalted and the old walk in question replaced by something durable in quality and respectable in appearance.

WE have more than once heard the complaint from Canadian manufacturers that some Canadian architects systematically specify American in preference to Canadian and English goods, and that this is done even in instances where it would be impossible to show that the article produced at home was in any degree inferior to that imported from the United States. If the facts are correctly stated, we think the complaint of manufacturers with large interests at stake in the country, is well founded. It is absurdly inconsistent for any Canadian architect to complain of the injustice of the conduct of those who, passing by home talent, entrust their architectural work to foreigners, so long as he pursues the same unpatriotic policy with regard to the purchase of the materials entering into his buildings. It is a pleasure to be told that there are architects in Canada who invariably give the preference to home productions. Let us hope that their example will be copied by those who in the past may have pursued a less commendable policy.

ABOUT 140 architects have registered under the Ontario Architects' Act, largely exceeding the expectations of the Council. As usual, Mr. Townsend, the Registrar, was kept busy during the last hours of the final day (Nov 5). Human nature is the same all the world over, and procrastination is the bane of architects as well as other people. While three months were allowed in which to observe this simple act, the majority did not register till within the last week or two of the limit. One man was so careless, that his more business-like partner had to rush down at the eleventh hour and do the deed for him. And now will come the examination of candidates who were caught without oil in their lamps. We presume the standard will be gradually raised so that in the course of a few years it will be impossible for any but competent and thoroughly trained men to enter the ranks of the profession—a "consummation devoutly to be wished." It is to be hoped that long before that time the Legislature will have so amended the statute, that no man may assume the simple title "architect" who has not entered the ranks of the profession in the accredited manner.

SEVERAL architects in giving expression to their views at the inaugural meeting of the Quebec Association, touched upon the important subject of the proper training of architectural students. It is an admitted fact that the amount of time which an architect in active practice can give to the instruction of young men employed as students in his office, is altogether inadequate to their requirements. Some means must therefore be found to supplement to a very considerable extent the knowledge which is at present obtainable from a term spent in an architect's office. Let us hope that in the near future an opportunity will be afforded the young men of the Province of Quebec to study architecture at McGill University. In the meantime, the interests of the students might be materially helped by the organization in the cities of Montreal and Quebec of Architectural Sketch Clubs, on the basis of the one existing in Toronto. Such an organization would open the way for architects to impart instruction to the students collectively, and at a slight expenditure of time. The meeting of the students from the various offices once or twice a month to compare notes and measure skill, would soon have its effect in a deepened interest in their work, as well as in another and no less important direction, the formation of friendships which would last throughout future years, and tend to dissipate the spirit of estrangement and unfriendly criticism which has marked to too great an extent the dealings of architects one with the other in the past.

THE need of improved building regulations and of proper and intelligent inspection is being constantly brought to the notice of architects. A case in point has occurred not more than a mile from the City Hall in Toronto. The work is being done under the supervision of "a practical man," so-called. A wall about 35 feet high supporting three floors and a roof was

carried on iron girders which in turn derived their support from iron columns resting on stone piers about 2½ feet square. The face of these piers coincided with the face of the wall above, bringing the whole weight on their outer edge. To make matters worse, the columns were about ten inches too short, the deficiency being made up by cubes of stone no larger than the base of the columns, about ten to twelve inches. The weight had depressed the cap-stones covering the piers till they were quite 1½" out of level, and the lapse of a few hours would probably have seen the sliding off or tilting of the small base-stones, the collapse of the wall and possible loss of life, a large number of workmen being employed on the building at the time. Immediate measures were taken to prevent a catastrophe. A continuation of the same wall was carried upon an old one-storey erection, the wall of which was cut by a doorway about nine feet wide and three windows of ordinary width. The door was at one end of the building, having but a 14 inch pier at the outer end and an 18 inch pier at the other side. The piers between the windows were about 2½ feet wide, the thickness being a brick and a half. One of the smaller piers had begun to shatter, and only prompt measures prevented a probable disaster.

HAS it ever occurred to an architect to contrast his and his clients' relations with the relations that subsist between the lawyer and his client, or with those of the physician and his patient? A lawyer's client, as a rule, submits implicitly to the judgment of his professional adviser, while a sick man will not think of hiding the merest symptom when he asks the advice of his physician, knowing full well that he cannot be intelligently prescribed for unless he gives the doctor his fullest confidence. Frequently the man or woman about to build seems to have the impression that their architect is possessed of the spirit of divination, an impression that is liable to be rudely knocked on the head about the time the stairs are in a sufficiently forward condition for the man and his wife to prowl around, and pick and tear limb from limb (so to speak) the unfortunate and absent architect. The architect will probably have the scene depicted to him on his next visit by a grinning foreman who, if inclined to be spiteful, will add little variations of his own concocting. But seriously, architects are inclined to take too many things for granted. The only safe rule is to discuss the minutest matters of requirement, and to put all decisions in writing for future reference or confirmation—then such remarks of the client as "I understood I was to have such and such a thing," can be met by confronting him with the record. It would also be a wise precaution to have the matter of the ownership of the plans understood from the outset, as well as the percentage to be charged. If the architect has a delicacy about mentioning such matters, it is an easy matter to have a condensed tariff printed, containing also the accepted professional practice, and which could be either handed to the client or sent to him in the course of the earlier correspondence. Many a law suit, lost time and temper, would be avoided by careful observance of these points.

WE have little faith in the result of the efforts which are being made in Toronto and Montreal to substitute day labor for the contract system in the construction of public works. The experience of leading American cities, as set forth under the heading, "Contract vs. Day Labor" in the present number, is on the whole strongly in favor of the time honored system of inviting competition amongst contractors for the performance of such work. It is contrary to reason to assume that it can be done cheaper by day labor than by contract. The contractor whose capital is at stake in his undertakings is acting under an incentive to see the work expediously performed, which is entirely lacking in the case of civic employees, who know that their remuneration will be the same whether they exert themselves much or little. As to the quality of the work, the city has the power by means of properly drawn specifications, competent and honest inspection, and a sufficient forfeit to be required from the contractor for non-fulfilment of contract, to secure for the ratepayers under the contract system the best as well as the cheapest service. The unsatisfactory results of the day labor system appear to be already making themselves felt in the city of Montreal, where a deputation of property owners recently waited on the Council and asked that the assessment made upon them for a certain drain built by day's work be reduced to the same figure as if it had all been done by contract. They alleged that the day's work had been more expensive than necessary in consequence of the work not being properly done. It is not difficult to understand the favor which is accorded to the day labor system by many of the aldermen who are naturally desirous of making themselves "solid" with the "labor vote" in view of the near approach of election day. It is a significant fact, however, that the gentleman who for many years was chairman of the Board of Works, of Toronto, and was himself formerly a contractor, recognizes that the interests of the citizens would be better served by the contract system. Such an opinion, coming as the result of long practical experience from a gentleman whose integrity is beyond question, and supported by the experience of the Engineers of the leading cities across the line, leaves little room to doubt the wisdom of a return to the system of executing public works by contract. Concerning the purchase of materials and supplies, we believe every argument is in favor of doing so by public tender as opposed to placing such an immense patronage in the hands of heads of departments.

THE Twenty-Fourth Convention of the American Institute of Architects held its sessions in Washington, D. C., Oct. 22 to 24, inclusive. The discussions were interesting and animated, while the utmost good-fellowship prevailed. Between 90 and 100 members were present. According to the roll call, it appears as though four or five of the visitors included their wives as members, though there is no record of the ladies having spoken or voted. The President, Mr. R. M. Hunt, was unfortunately absent through illness, and his address was read by proxy. It was a carefully prepared paper, and ought to be read by all members of the profession. Mr. L. C. Sullivan made a peculiar report for the committee on a code of ethics in which he declined to submit a definite code, alleging as a reason that the elements of the Institute were of rather a mixed character at present, partly owing to the absorption of the Western Association, urging, however, that the topic be kept constantly in mind Perhaps the most important report was that of a committee on Clerk of Works. The three points enunciated deserve to be put strongly before the public, and the legal profession particularly, viz.: First, that an architect offers and is paid for only a certain limited kind of superintendence; second, that it is to the interest of the employer in many cases to pay for constant detailed superintendence; third, that the architect is in no sense a contractor, nor is he responsible for the contractor's misdoings, and that the commissions usually paid would be utterly insufficient for any such services or responsibilities even if they were desirable. The committee further recommends that in order to keep this matter constantly before the attention of clients, a clause be inserted in the schedule of fees giving the rates at which clerks of works would be supplied. In the matter of uniform contracts, the feeling of the convention seemed to be in favor of a further trial of the present form, which had proved on the whole satisfactory. A committee was appointed to confer with the Builders' Association, the Board of Underwriters and the Association of Building Inspectors, in reference to the method to be pursued in draughting a model building ordinance. We hope our own Association will take hold of the same problem and deal with it vigorously, as we are much behind the times in our regulations as to safe building. The President's address referred to the incorporation of the Institute of Architects of New South Wales, but strange to say, he loses sight of the fact that an organization nearer home, the Ontario Association has likewise been incorporated this year, and we believe is the first Association of the kind to be thus legalized.

The gentlemen appointed to judge the plans in the above competition, Messrs. E. E. Taché and H. Staveley, Quebec, and Victor Roy, of Montreal, have reported in favor of the following awards: 1st prize, $1,500, to Mr. Charest, Quebec; 2nd, $1,000, to C. K. Porter & Son, Buffalo; 3rd, $500, J. F. Peachy, Quebec.

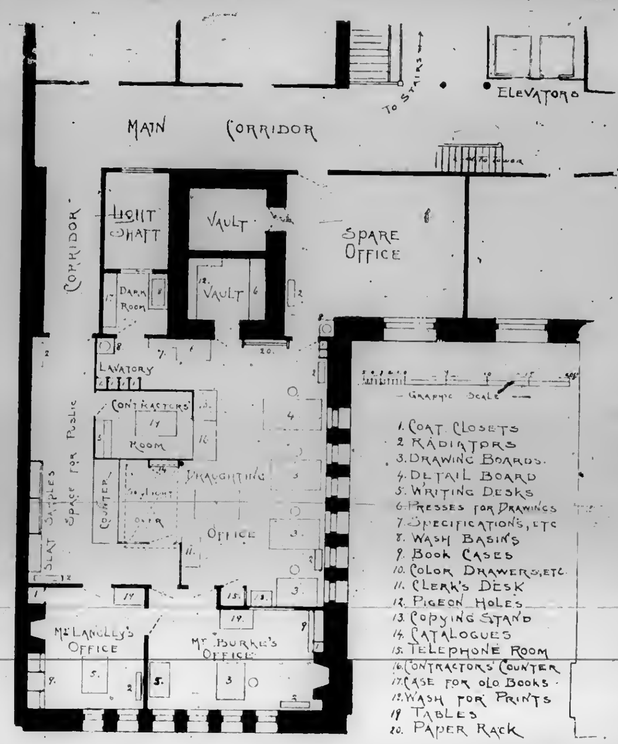
OUR ILLUSTRATIONS.

PERSPECTIVE VIEW, NORTH ELEVATION AND PLANS OF HOUSE IN QUEEN'S PARK, TORONTO, FOR D. E. THOMSON, ESQ., Q.C.—LANGLEY & BURKE, ARCHITECTS.

THIS house is situated in what might be called "Architects' Row," the five or six residences in the locality being designed by as many different men. It is finished in hardwood throughout. The upper portion of the front is carried out in solid timber-work, filled in with brick.

ARCHITECTURAL OFFICES.

The accompanying cut is a drawing of the new offices of Messrs. Langley & Burke in the new Canada Life Association Building, recently erected on King Street west, Toronto. The offices occupy the west wing on the 5th or upper floor. The central portion of the public office is lighted by a large skylight. The drawing and references indicate the general arrangements. The dark-room is utilized, in addition to the blue-printing arrangements, for the storage of old building journals, which are referred to but seldom. The vault is fitted up with the usual compartments for documents and papers, and with a press for drawings, which are kept flat in portfolios, labelled and catalogued for ready reference. Drawings and specifications in daily use are kept in drawers beneath the counters, where they are classified and obtainable at a moment's notice. A catalogue case is provided for the storage of the various trade catalogues, classified and of ready reference. No. 6 is a press for detail drawings which may be required for future reference, while the copies of those required in current work are kept in drawers in counter 16. The screen enclosing the lavatory and contractors' room is about 6 feet high. A portion of the contractors' room is occupied by Mr. M. Lough, who attends to the surveying of sites, etc., in connection with the location of new buildings, as well as his own practice of valuator and P.L.S. The private offices are arranged for ready communication between the principals, and Mr. Burke's room has direct access to and overlooks the draughting office.



VILLA FOR MR. J. B. SALIME, ST. HYACINTHE, QUE.; MATERIALS, STONE, BRICK AND TERRA COTTA.—DAOUST & GENDRON, ARCHITECTS, MONTREAL.

COLLINGWOOD MARKET DESTROYED BY FIRE AUGUST 13TH, 1890. GIBSON & SIMPSON, ARCHITECTS, TORONTO.

PUBLICATIONS.

The Canadian Manufacturer, Toronto, announces that its subscription price will hereafter be one dollar per year instead of two dollars as heretofore. The size of the pages and the number of them will remain unchanged, and it will be issued twice a month as it has been ever since its establishment in 1882.

FIRE PREVENTION.

IN an essay read at a recent meeting of Engineers of Fire Departments at Detroit, a Mr. Goetz asks this pertinent question:

"Which is the best economy, to continue building as now done, and trust to the fire department; or put up better buildings that will not destroy each other, but will burn out individually?"

He then proceeds to give some statistics which are truly startling, and which go to show that it is not for lack of efficient fire departments, but that increased precautions and better buildings are the crying necessities of the day. No human power could control many of the fires of the last few years, fires which would never have occurred had right methods of building been observed. Here are a few of his figures:

The Insurance Commissioner of Massachussets estimates that quite 90 per cent. of all fires in that State were preventible. In New York the ratio of fires to buildings was in 1866 as 1 to 80, while in 1889 it had risen to 1 to 40, and while the number of buildings had increased 80 per cent., and the population 120 per cent., the outbreaks of fire increased 250 per cent.

These instances may be taken as fairly representative of the state of things in all large cities on this side of the water, and indicate that the methods of building and the habits of the people are much more careless than those of the nations of the old world. In some cases this carelessness reaches almost to criminality, were it not that it must be put down to sheer ignorance.

It is high time that stringent building laws should be enacted in order to save us from ourselves, for we are in reality our own worst enemies. What other people in the world could witness month after month, and read day after day in the public prints accounts of awful holocausts, where human beings were roasted by the score and where property valued at tens and hundreds of thousands of dollars was literally wiped out of existence, and take it all as a matter of course, forgetting the occurrence in a day or a week?

It has become a recognized fact, that even in the most thoroughly constructed fire resisting buildings, serious loss may occur in any section of it occupied by the usual office or store fittings, or where goods of an inflammable nature are stored. The chief reliance, where such precautions as automatic sprinklers cannot be used, is to so construct our buildings as to confine the fire to some particular section or building, and to this end should our building laws and methods of building be directed.

It is almost useless for wealthy corporations to lead the way by erecting fire-proof buildings if the municipalities do not follow it up by compelling those erecting buildings in the same neighborhood to do likewise; one fire-proof building in a block of

inflammable structures would be destroyed were a general conflagration to occur, while two or three blocks of fire-proof buildings would be practically indestructible. But even where fire-proof building is out of the question, a large measure of fire prevention may be secured by more careful and substantial methods of construction. The main features to be observed to secure this end are: 1st, walls so substantial and of such materials that the whole interior may be destroyed and yet leave them intact; and, 2nd, such a method of constructing posts, beams and joists and of anchoring the same to the walls, that the whole or portions may be destroyed or detached without affecting the stability of the rest of the structure. A large proportion of the extensive conflagrations now only too common would have been confined to one building had such precautions been observed.

Now is the time for our cities and large towns to make wise provisions for protection from disasters which will surely follow in the wake of faulty and poor construction. We can never do it better or to greater advantage than at present. The bulk of our business streets are yet in a formative condition, and occupied by buildings that are, comparatively speaking, only temporary erections which must within a decade or two give place to edifices in keeping with the march of progress.

Montreal and Toronto should lead the way in the preparation of proper building laws. The Architectural Associations of the two provinces would lay the country under lasting obligations could they be instrumental in bringing about this much needed reform.

There was a spasmodic and feeble attempt made by a Committee of the City Council of Toronto about a year ago to re-model the existing by-laws. The Committee were apparently paralyzed by the magnitude of their task. We think the matter should be placed in the hands of experts, else nothing creditable will result. The time has arrived in the history of large cities like Toronto when the duties of the aldermen should be simply legislative, leaving the execution of all practical matters to practical men.

A paid Commission should be appointed to do this work, and having ample time allowed to do it thoroughly. This Commission should be composed of experienced architects as being the class of men best posted in matters of safe building and advanced methods of construction. The Commission should have authority to secure legal advice on legal points. The advice and experience of the City Engineer and any other officials versed in local requirements should be placed at their disposal, and they should be empowered to obtain in the way they deem best the latest data and legislation extant on this all important subject.

QUERIES AND ANSWERS.

CHARLOTTETOWN, P. E. I., Nov. 5, 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—Would you kindly give me the addresses of firms in Toronto dealing in architects' supplies—that is, if there are any such. It is a wonder to me such persons don't advertise in the CANADIAN ARCHITECT AND BUILDER.

Yours truly,

C. B. CHAPPELE.

[Messrs. James Bain & Son, King St. East, Toronto, are dealers in architects' supplies. Doubtless there are others also of whom we have no knowledge.—EDITOR C. A. & B.]

1724 NOTRE DAME STREET,
MONTREAL, Oct. 29, 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—Would you kindly give me a list of the most useful books you would recommend an architectural student to study.

Yours truly,

STUDENT.

[Gwilt's "Encyclopædia of Architecture"; T. M. Clark's "Building Superintendence"; Ferguson's "History of Architecture"; Viollet de Duc's "Discourses on Architecture"; Stevenson's "House Architecture"; Rickman's "Architectural Styles"; Paley's "Gothic Mouldings." Most of these works may be obtained by corresponding with Mr. Thos. Henry, book agent, McGill St., Toronto.—EDITOR C. A. & B.]

CONTRACT VS. DAY LABOR.

MR. Jennings, the newly installed City Engineer of Toronto, has inaugurated the system of constructing public works by day labor under the supervision of the Department of Works, of which he his the head, instead of by contract, as was the practice formerly. It is claimed on behalf of the new system that better results are obtained at less cost in comparison with the practice of letting the work by public competition to contractors.

With the object of gaining information on this important subject, the editor of the CANADIAN ARCHITECT AND BUILDER recently addressed to the city engineers of a number of the principal American cities, the following letter of enquiry:

DEAR SIR,—I would feel grateful for any information which you may be kind enough to furnish me with on the following points:

1. Is the construction of public works, such as sewers and pavements, in your city, pe formed by day labor under your direction or by contract?
2. Have you given both me hods a fair trial?
3. Which method do you consider to be the most satisfactory in the interests of the citizens, and on what do you base your opinion?
4. In the purchase of supplies is it customary in your city to advertise for tenders for the same, or are the heads of departments authorized to purchase in whatever way they think best, without tenders being asked? Which system would you consider the best?

The replies to these enquiries are as follows:

From Oscar H. Peacock, City Surveyor, Rochester, N.Y.:—1. By contract, under direction of Executive Board and myself. 2. Yes. 3. By contract; more work can be done for less money. 4. Heads of departments purchase. There are cases where a purchasing agent could make better terms, especially where large quantities of any article are required. But as changes are constantly being made in all kinds of manufactured articles, the agent is liable to get overstocked with materials that will remain on his hands. Heads of departments know their needs better than any one else, and ordinarily can buy as close as any one else.

From O. H. Cheney, Acting City Engineer, Chicago:—In this city sewers and paving is done by contract. We have tried doing the work by day's work, and have found that it costs at least 10% more. I find by experience that the city pays higher wages and gets less work out of the men than contractors. Some are employed more for their usefulness at the polls on election day than for hard work. Let your work by contract, place competent and trustworthy men in charge as inspectors, and you will save money for the taxpayers. In purchasing supplies, anything that costs more than $500, we advertise for bids and award to the lowest bidder. We employ a purchasing agent who shops around and makes the best bargain he can for articles costing less than $500. Get an honest man for purchasing agent, and follow this rule and be happy.

From S. L. Sweedley, Chief Engineer and Surveyor, Philadelphia:—1. By contract. 2. We have never performed the works you mention by day labor. 3. Our method consists in advertising and giving out to the lowest bidder by contract a specified amount of work to be executed with the liability of the city fixed. With very thorough inspection I believe this may be entirely satisfactory. Not having tried both methods mentioned, I cannot express an opinion from practice. 4. Materials and labor are not purchased separately.

From H. D. Sudden, City Engineer, Detroit, Mich.:—1. The construction of all public work is let by contract, except catch basins. 2. The other plan has never been given a trial. 3. I have no doubt that if improvements were made by day labor, better work would be secured, provided political influence did not intervene. I also think that the work would be more expensive than under the contract system. 4. In the matter of supplies, the same system prevails generally, viz., the contract system. The Board of Public Works have power under the charter to do work or purchase supplies up to the amount of $200 without advertising for bids. I consider the contract system the best under the last head.

From Mr. G. Mann, City Engineer, Buffalo, N. Y.:—1. By contract. 2. No; everything has been by contract. 3. Through an efficient Board is in my judgment much the best way. 4. We advertise for everything, excepting small purchases for office use.

TORONTO ARCHITECTURAL SKETCH CLUB.

ON Tuesday evening, Oct. 28th, there was a large gathering at the Club rooms, nearly forty members being present, when a paper on "Stained Glass as a Decorative Art" was given by Mr. Sam. Jones. His remarks proved of much interest to those present, and after some discussion thereon a vote of thanks was tendered the lecturer for the evident trouble he had taken in preparing the paper.

The competitive schemes for the decoration of the Club rooms were on exhibition at this meeting, and attracted much attention from the members. Mr. J. A. Radford was awarded both 1st and 2nd places by Mr. Darling, the critic, who, however, reserved his criticism till a later date. It is the intention of the Committeee to carry out the prize scheme if found compatible with the state of finances.

A successful meeting was held on Tuesday, Nov. 11th. Mr. Edmund Burke gave another one of his practical papers. The subject this time was "Slow-burning Construction," and with the experience the lecturer has had in this method of building, he was able to make it very instructive to the members. An animated discussion followed, in which nearly all present took part. Mr. Burke again received a hearty vote of thanks from the Club.

Before the lecture, the President, Mr. S. G. Curry, spoke of the importance of the members coming forward in sufficient numbers to ensure the success of the various classes which have been proposed. Classes for water color, drawing from the antique, mathematics and construction, the committee have under consideration already.

At the next meeting, Tuesday, Nov. 25th, Mr. R. W. Gambier-Bousfield will give a paper on "Mouldings" which he hopes to make not only explicit to the younger members, but instructive to the seniors. The drawings for the postponed "Summer Cottage" competition will be on exhibition at this meeting.

The Club is still increasing its membership, six new names having been added to the list this month. A visit to the Club at its comfortable quarters will repay anyone at all interested in its work and aims.

GOOD PLANNING.*

GOOD planning does not mean simply the disposition of the rooms and approaches on a horizontal plane; their vertical disposition and relative bevels are of quite as much moment. Good planning means the utilization of every square yard that your building covers, without waste. And this applies not only to trade buildings in a crowded city, but also to public buildings, when the architect has ample elbow room. A good plan is always distinguished by a certain simplicity and ease. The better the plan, the more obvious it will seem that the architect's arrangements are those that would have commended themselves to any one. In planning, as in other arts, the greatest art is the concealment of it; that is to say, it should be like Nature, that never exhibits conscious effort.

Not only is good planning apparently effortless, it is more; it is the foundation of picturesqueness. There is really very few cases where a symmetrical arrangement is the one best suited to the requirements of a building, but where it is, then adopt it. Buildings deliberately planned for picturesqueness are toys, or constructed paintings, whereas a picturesqueness that flows naturally out of the plan is a never-ending joy. It may be that a plan on the face of it may seem to be devoid of picturesque elements, but the vertical planning may be made to secure a pleasing and broken outline.

Though the plan is the foundation of a design, yet when it is settled in its various features, the plans of the various floors, the sections, and the elevations should grow together as an organic whole.

Architectural design is like a game of chess, the man who sees the greatest number of moves in advance is the better player or planner. After certain preliminary meditations on a blank sheet of drawing-paper and a few crude trials, the idea of the building begins to take shape, and when that and the main features are grasped, the details grow with astonishing rapidity.

The conception of the building then takes concrete form, and for those who have not time to work out all the parts in detail, it is quite possible to convey the ideas to others who have. To be able to perform this very important function of conveying to other minds the ideas in one's own, it is necessary, I need hardly say, to have sufficient knowledge to be able to do all the work without aid, if necessary. I find myself that it is possible to settle every important point of a plan, even to very accurate dimensions, with a comparatively few leading lines; and to know what work it is essential for the principal to do himself and what to depute to others is a very important acquirement in these times of railroad speed. As, I suppose, every one has found out for himself who has practiced design that there are times when a plan obstinately refuses to yield to any analytical power mind may be able to bring to bear upon it at the time. Some problems seem absolutely insoluble. The only remedy in such cases, I find, is to sleep upon it, and then the solution often presents itself voluntarily and without effort, but I have known a bad case to last as long as a week.

It has been said that "to him who can wait, all things are possible." And this seems partly applicable to planning; the misfortune of it is, that often we cannot wait, and in such cases something inferior has to be put up with for the time being.

Planning is a creation, and governed by geometrical possibilities. The man who has the most invention and can carry out combinations of form with mental readiness, who, when met with difficulties can, by ingenious arrangements, overcome them, who has that grasp of the conditions of the problem and can fit all the parts together in such a way that administration can be carried on with the greatest economy of labor, who gets the best possible light for each apartment and from the right direction according to its use, who so arranges his building that full advantage is taken of the aspect, and who, considering throughout that the object of a building is use, has full thought for the health and comfort of the occupants, that man is the ideal planner. But to carry out such an ideal demands an immense amount of varied knowledge, architectural and physical. He must in the first place have studied and be familiar with the methods of ancient practice and the best methods of contemporary architects.

He must understand the physical principles upon which modern systems of drainage and ventilation are founded, be familiar with mechanical ideas and ready in the application thereof, and when all these attainments are embodied in one mind, the foundation of a good architect is made. But why the foundation only? Does it not seem that in these multitudinous acquirements we have the whole architect, body and soul? Body certainly, but not exactly soul. In fact it would be impossible to make a good plan, architecturally speaking, without possessing something not included in this list of qualities. I doubt indeed if a well-balanced plan could be produced by any one not possessed of considerable artistic susceptibility. The artistic, the poetic must be added, the planner must have a ready conception of the possibilities of his construction from an architectural point of view, if he is to work out a satisfactory *ensemble* which will prove a lasting joy to future generations.

*Address by President T. Milliard Reade before the Liverpool Architectural Society.

The death is announced near Kingston, Ont., of Mr. R. Sellers, at the extremely advanced age of 99 years. Mr. Sellers was a Canadian, having been born at Kingston in 1791. He filled for some time the position of superintendent of public works in that city, and late superintendent of the building of the Quebec Cathedral and Fort Henry.

Mr. St. George, the efficient City Surveyor of Montreal, is taking out patents for a socket joint designed to bind together a new sectional vitrified clay pipe which is intended to take the place of brick for sewers of large diameter. The flow of sewage is said to be very much accelerated by the use of this pipe, while the leakage is reduced to the minimum.

It is a pleasure to be informed that the St. Johns Drain Pipe Company of St. Johns, Que., have had a very promising correspondence and many requests for agencies from all parts of the Dominion in response to their advertisement calling the attention of architects and builders to the Hansen patent chimney toppings of which they are the manufacturers for Canada. The article is a good one, and therefore deserving of the success which it seems destined to achieve.

SOME OF THE OBJECTS OF AN ARCHITECTURAL SKETCH CLUB.*

By John Spencer.

IT is not our intention to name all the objects of such a club; we do not even claim that all those respecting which some remarks will be made, are principal ones.

The objects of a club are many; those of an architectural sketch club are as many sided as are the study and practice of architecture. It may be proper to state that the term "club" denotes a gathering together of individuals for mutual profit and social intercourse. Let us look at the latter for a moment or two:

Architectural draughtsmen and designers, from the nature of their calling, have few opportunities for meeting together and forming friendships, except in the case of those who are working together in the same office, unless it be through the agency of a club. There they ought to be able to meet together, discuss among themselves such objects as may interest them in their daily work; talk over some of the difficulties they have to contend with in design, in construction, in business affairs, and seek advice and counsel from each other.

It is unnecessary to designate the means that may be taken to further social intercourse, as the tendency of all clubs is, perhaps, too much in that direction, further than to advise that it is good sometimes to gather together and relieve the routine of business by indulging in music, in all its branches, and to relax the mind by games of skill in which "mind will sharpen mind."

One great object at which this and other kindred clubs should aim, is to teach its members the value of architecture as a study. In this respect it is as wide and as deep as law or medicine; as many sided as divinity; as entertaining as the productions of the best writers of fiction, and as comprehensive as the history of the world, because the history of architecture is also the history of the world, from a social and religious standpoint.

The progress of architecture has been co-equal with the progress of the nations of the world; as they have advanced, architectural skill has advanced; as they have declined, the monuments of architecture have also declined; because these statements are truisms, we are able in some measure to understand and to value the skill and energy of the natives who inhabited the banks of the Euphrates, the Nile, and the countries of Southern Europe.

It may be considered by some unnecessary for a practical architect to be acquainted with the history of his profession, but we venture to say that no man can excel as a designer who is not a master of the various styles of ancient and mediæval architecture. We do not say that he must design in one style, and in that only; or that he must copy the masterpieces of ancient art and skill; but if he intends for instance, to design a gothic church, and to design it in the style prevailing in one period, he ought to know the difference between the detail of the twelfth century and that of the fourteenth; how can he do this unless he has made a study of the history of architecture? In a new country like this it is impossible to pursue this study from existing examples. What is good, among its works, is the production of men who have made a study of architecture, and of some who have studied it from the monumental buildings of the old world; from these buildings (their age being known) the detail of one period can be distinguished from that of another period. To such an extent is the history of nations bound up with the history of architecture, that it is now difficult to distinguish between the direct influence of the one upon the other, and the reflex influence of architecture upon nations.

In such a club as this, means should be taken to make amends for the want of ancient examples from which to study.

First—Books on architecture should be obtained; books dealing with Egyptian, Grecian and Roman architecture; books full of information and details taken from the best of existing examples; books dealing with gothic architecture in its many and diverse forms and styles; books such as were produced by Welby Pugin, Billings, Brandon, Collins and many others. We urge this as an important part of an architectural education, because in too many cases it is neglected; one result of this neglect is seen in the low estimation that is placed, in this country, on gothic architecture, because much of what is called "gothic" is incongruous in style, bad in detail, and lacks the symmetry and beauty of European gothic.

Second—Modern architecture should be studied from the buildings around and accessible to us, with a view of determining, by comparison, what is desirable, useful and pleasing. The eye ought to be trained to take in proportion, and instinctively what is noble and ignoble. We venture to suggest that, from time to time, some portion of a finished building be selected, a competition entered into by the members of the club, for the best measured drawing of such a building, together with a free-hand sketch of same and a small prize awarded to the author of that which is considered to be the best; by such means as are now suggested, something will be done towards promoting the welfare of the club, and the mutual benefit of its members; something done in the way of stimulus.

Third—Attention ought to be paid, not only to form and beauty, but also to construction and the proper use of materials. In regard to materials, designs should be made to suit the materials that are obtainable. In a church, which professes to gothic, wood should never be used for tracery and mullions; if you want to design in the gothic style, and can not afford to use stone for tracery in your windows, rather choose an earlier and simpler style, and by grouping your windows, avoid the use of wood in places where it is contrary to the spirit of the style. Without a knowledge of construction, an architect is like a ship without a rudder; how can we promote this knowledge? Let us have friendly competitions, but not competitions in which we will be asked to produce for nothing buildings such as we are engaged in designing during office hours, and for which we expect to be paid; rather let them be of such a nature that they will incite us to activity because of the difference between the work in them and that of the office. It would not be amiss to have a competition for the best truss roof for a church, or for a building with a span of 50, 80 or 100 feet.

We must not forget that while Art is part of architecture, architecture is not painting or picture making. The man who can paint will find that he has an useful accomplishment, but we are not banded together in a painters' sketch club nor in a sculptors' club; their arts are in many ways useful to an architect, but are not fundamental to him. No man can be an architect who can not draw intelligently and correctly. Our aim should be to see that every member is proficient in this respect. In some towns in England art classes have been established in which architects take a leading part, under the fostering care of the South Kensington Art Department. This is possible in every town in England. We know not what means are within reach in American cities; but where such do not exist, or only partially exist, clubs like this should endeavor to do something to place within the reach of many the means of acquiring instruction in the principles of art, and especially art in its simpler forms.

We must not forget that while the architect desires to progress, he can only progress in the ratio of the taste of those for whom he caters; hence a love of that which is beautiful must be inculcated in the minds of those who are outside the profession. The aim and object of an architectural sketch club should therefore be: *First*, to develop the tastes and ideas of its members. *Second*, to promote outside of its ranks a love of that which is true and noble, by cultivating what Ruskin calls "the seven lamps of Sacrifice, Truth, Power, Beauty, Life, Obedience and Memory." We may not be able to establish a taste for mediæval buildings; not be able to point to old Baronial mansions; not be able to see the stately beauties of feudal castles; may not be able to point with the finger

> "Where enthroned in adamantine state,
> Proud of her bards, imperial Windsor sits;"

but we can see buildings which have been raised by courage and industry, buildings in which skill and art are embodied, and from these we must draw the inspiration which will lead us to

*Essay read at the annual meeting of the Denver Architectural Sketch Club.

achieve more than has been in the past. It is sometimes said that architecture has not progressed during the last three hundred years; it ought rather to be said that the opportunities for architectural display have not progressed. This is an utilitarian age: one in which quantity is, too often, placed before quality. Let us aim at working in the line which the age demands, and yet endeavor so to use our opportunities that permanent and lasting results will be seen, results which will make the non-professional man see the advantages of education and training, and hasten the recognition of the fact that none but trained and skilled architects should be allowed to design the homes and public buildings of a country so great as this is.

Let us not aim at that which is new for its own sake, remembering that "there is nothing new under the sun," but rather aim at producing that which we are certain will be pleasing and useful, although it may be something in a beaten and well trodden path.

MONTREAL.

(Correspondence of the Canadian Architect and Builder.)

THE principal interest amongst the architects of late here has been the proposed formation of the Province of Quebec Association of Architects. That meetings of the architects, if conducted in the proper spirit, will tend to elevate the profession there is not a doubt. It is to be hoped that our architects will not attempt too much, but will be content with the formation of a society resembling that of the Institute of British Architects, of England, and not try to create a close corporation of architects for the Province of Quebec. Chairs of architecture in our colleges and schools of art should undoubtedly be encouraged, if we wish to raise the standard of the architectural profession in the Province of Quebec, for it is an admitted fact that no practicing architect has the time even had he the wish, to devote to the education of his pupils and attend to his own business.

BOARD OF TRADE BUILDING.

Rumor has it that the Board of Trade are about to call for competition plans for the erection of their proposed new building. It is said, but I can scarcely believe it, that the Board has decided to invite five American architects to compete, each of whom is to receive $300 for the plans submitted and that a prize of $300 is to be offered for the best three sets of plans submitted by Canada. The conditions are not published yet, so it is perhaps a little premature to comment too harshly until the conditions are made public, but surely the Canadian architects can at least hope for better treatment at the hands of a Canadian Board of Trade.

REAL ESTATE.

Real estate during the last month has been fairly active and the prospects of a good fall and winter business are encouraging. There were 151 transfers in the city proper and Cote St. Antoine during October, amounting to $512,500, which is slightly less than the corresponding month of last year. A Toronto syndicate has purchased the Decarrie farm at Montreal Junction and propose disposing of it in lots at once. Several solid brick houses have already been started by this syndicate on the adjoining property, and arrangements are in progress for drainage, water and gas. The money market has been rather tight, but lower rates of interest have assisted in making real estate investments popular.

The new "Feller Institute," at Grande Ligne, Que., of which Mr. Eric Mann, of this city is the architect, has just been completed and occupied at a cost of about $27,000. The new centre wing is 68' front by 47' deep, entirely built of stone. The front is of Scotch coursed ashlar and cut stone dressings of a fine close blue limestone found within two miles of the buildings. The present side wing 85' long has been entirely remodelled, and the college fitted throughout with hot water heating by two of Warden King & Sons' largest boilers. Water has been led to the buildings from a reservoir about eight hundred yards off, through a 4" iron pipe, and has been found a complete success. The water rises by natural gravitation 6" over ground floor, thus supplying the basement and ground floor without pumping. The supply tanks for baths, washing, etc., is on upper flat, contains altogether 8,000 gallons, and is pumped up by a patent hot air self-acting pump in basement. Gas is also laid through the entire buildings, generated by a "gas machine" built in the grounds outside. The hall and class room floors are laid with No. 1 Georgia pitch pine, and the dining room is finished in clear pine battens, slightly stained and varnished. The same architect has also finished the extensive additions to the Methodist Church, Lacolle, Que., and a new Scotch church in Hemmingford.

VISIT FROM MEMBERS OF THE IRON AND STEEL INSTITUTE.

During the past month Montreal has had the pleasure of entertaining the members of the Iron and Steel Association of Great Britain and Germany. The city tendered them a banquet at the St. Lawrence Hall, and our Harbor Commissioners gave them a trip through the Lachine Canal and down the rapids, stopping for about two hours at Caughnawaga, visiting the Indians and inspecting their handiwork, after which they inspected the improvements to our harbor at the foot of the current. Some people consider the money spent in entertaining our guests as useless extravagence, but it strikes me as one of the best investments the city has made during the year. Undoubtedly visits of such men as compose the Iron and Steel Institute do immense good to the country at large. Let them see for themselves that our country is a prosperous one, and destined to play an important part in the commerce of the world. It will open their eyes to the fact that there is something else in Canada than snow and ice—scenes which our winter carnival has so largely advertised—that we can build railways, canals, bridges and factories, as well as ice palaces; that Canada is rich in minerals which only require development. It will give confidence to capitalists to invest their money in our enterprises, and promote emigration of the right sort, not the kind known as "assisted."

CANADIAN SOCIETY OF CIVIL ENGINEERS.

The usual fortnightly meeting of the above society was held at its chambers on St. Catherine street last Thursday, when there was a fair attendance, and an interesting paper on the errors or defects in levels was read by Prof. McLeod, of McGill University.

COLLAPSE OF A BUILDING.

A building on Vitre street in process of erection for D'Ouimet, collapsed on Thursday last and seriously injured two of the workmen. That more were not killed is miraculous. As far as I can learn it was caused by carelessness or ignorance on the part of a workman who commenced to demolish an overhanging chimney. He began his work at the bottom instead of at the top, thereby causing the whole chimney to fall bodily, breaking the beams and joists and throwing down the building.

DECORATION AND FURNITURE

THE ACCESSORIES OF ARCHITECTURE.

SCULPTURE.

George H. Blagrove.

AMONGST the purely ornamental accessories of architecture, we may surely assign the post of paramount importance to sculpture, including under that term all representations of natural forms, whether in high or low relief, or in detached groups or single figures. Were we to attempt a classification of such forms as may be represented in sculpture, it will readily be conceded that the most complex of natural organisms, being regarded as highest in the scale of development, ought to occupy the foremost rank. Thus we should naturally be led to assign the first place to the human figure, and successive subsidiary places to animal and vegetable organisms in order of priority. There are artificial forms, such as implements and weapons, which may be represented in sculpture, but the consideration of these may be reserved for the present. Starting with the assumption that the human figure is the highest form to be treated in sculpture, and that its application to architecture is therefore one of the first considerations in the art or science of ornamental design, it should strike us as somewhat strange that this subject has received so little attention from architects, not only in the present day, but in times past, or that those who have manifested exquisite taste in the proportions and decorations of buildings should have so frequently failed to appreciate the true relation between architecture and figure sculpture. This is a matter of no little importance to us in the present day, when architecture, discarding effete traditions, and flinging aside the trammels of precedent, is seeking to strike out an independent path of her own. If, animated by the new spirit which has been infusing itself into our art, we should set ourselves to formulate new principles for our future guidance in the disposition and treatment of architectural accessories, our first enquiry would be, What can we learn from the past? and, having satisfied ourselves upon this score, we might, after a careful examination of the new conditions under which we have to work, trust to our own sense of architectural propriety not to lead us astray. In regard to sculpture, it may be inferred, on the principle that the greater includes the less, that when an architect has made up his mind as to the treatment and disposition of figure representations, he is not likely to fall into error in regard to subsidiary ornamentation. This may be true, but the converse by no means holds good, as already intimated.

The Greeks, who attained to the highest degree of excellence in the treatment of figure sculpture, committed grave errors in its application to architecture, though it may be said that they never erred in the arrangement of subsidiary ornament. The use of Caryatides has been condemned often enough, and modern architects are happily in no need of a warning against such a misapplication of the human form in sculpture. We may regard it as an accepted principle that no natural object should be represented in sculpture as performing any function which it could not fulfil if real. Thus, if the Caryatides had been living figures they could not have supported the loads placed upon them, and hence the incongruous effect resulting from their employment. The same principle in its application to foliated ornament will be considered further on. Perhaps it is not quite so obvious that the Greeks did wrong when they placed figure sculpture in the tympanum of a pediment. A little consideration, however, should convince us that this is so. Surely, if the place of honor in decoration is to be assigned to the human form, the framework should be adapted to the figure, and not the figure to to the framework. This being conceded, it is decidedly wrong to crowd the tympanum of a pediment with figures, as at the Parthenon, so that those near the extremites of the raking cornices have to be reduced in scale, or placed in recumbent positions. Moreover, considering the usual height of

most pediments, it is clear that the best works of art cannot be viewed appreciatively from such distances, and that first-class sculpture ought to be placed nearer to the eye. The employment of any sculpture other than first-class is here assumed to be out of the question. We can better afford to dispense with all decorative accessories than to display the limits of our capabilities; and, perhaps, modern architecture might be improved if it were to be made more suggestive of reserve power. It is certain that multiplicity greatly detracts from the effectiveness of figure sculpture, however good it may be. Architecture gains in grandeur by a multiplicity of parts, within certain limits. This frequently necessitates exact repetitions of the same form, as, for example, in a colonnade. An observer is not wearied or perplexed by the contemplation of a row of columns all alike, because he does not feel called upon to examine each particular one. But in figure sculpture a repetition of the same form would be ridiculous, while a multiplicity of forms, all differing slightly, and each claiming special attention, would be tiresome in the extreme.

If figures in a pediment are generally too high to be properly seen, the same is true of figures which are perched upon the summit of a lofty entablature, as upon the arch of Constantine. The architects of the Renaissance sinned worse than the Romans in this respect when they planted human figures upon the highest parts of their buildings, where the Mediævalists might have placed pinnacles, and sometimes even perched them upon the apex of a pediment. The figures upon St. Peter's at Rome and St. Paul's in London seem to be balancing themselves with some difficulty upon ridiculously narrow pedestals, as if they were anxiously awaiting the arrival of ladders by which to escape from their perilous positions. The disadvantages of placing figures at such heights should be obvious; yet the practice is often met with in the present day. Not only are the figures foreshortened, but the difficulty of providing them with suitable pedestals is practically insurmountable. If the pedestal be broad enough to convey the impression of safety and stability it will have the effect of cutting off a considerable portion of the figure, while if it be made narrow enough to intercept the view, the figure will appear to be in danger of falling. The disquieting impression of instability is greatly obviated when the figures have an attic storey behind them, instead of being marked off against the sky. Thus, apart from the question of height, the arrangement adopted upon the arch of Constantine is not inappropriate. But surely if the post of honor is to be reserved for figure sculpture, its proper situation is so near the eye that its beauties can be effectively seen without any distortation. It is strange that the Mediævalists, whose representation of the figure were so inferior to those of the Greeks, should have displayed so much reverence for the human form that they took care to enshrine it within niches supported upon corbelled pedestals and overtopped with richly designed canopies. They rarely placed their sculpture too high to be adequately seen, apparently recognizing that the place of honor is not necessarily the highest part of a building, and that works of art which are intended to command special attention require to be framed and protected. The worst solecism in Gothic art consisted in placing a series of superimposed figures on each side of an arched doorway, as in certain foreign examples, the figures being so arranged as to follow the curves of the pointed arch, so that the upper ones leaned over and appeared in danger of falling. The Renaissance architects never did anything half so bad as this, while their tastefully designed pedimented niches were quite as satisfactory in their way as the crocketted canopies of the Gothic artists.

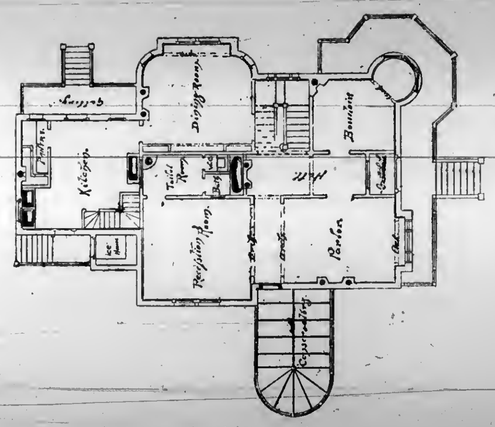
The architect should surely have a word to say as to the treatment of the figure sculpture which is to adorn his building. In these days of departmental craftsmanship, when each artist is striving to excel in his own special branch of activity, there is some danger that the spirit of unity—which should pervade every great architectural work as a whole—may here and there fall into abeyance. If it is important that ornamental sculpture of an architectural character should be subordinated to figure sculpture, it is still more important that the figure sculpture, which is, after all, only a decorative accessory, should be so designed as to harmonize with the proportions of the building, besides assisting to express its purpose. It is evident that figures which are greater than life-size tend to dwarf a building, because an observer naturally supposes the figures to be smaller than they actually are, and gauges the adjacent details accordingly. The question for the architect to decide is, whether he wishes to impart an appearance of size to his building or to the statuary associated with it. If the former, the simplest plan is, if possible, to keep the figures down to life-size. This enables us to make the parts of our building larger than we could otherwise venture to do, supposing the figure sculpture to be sufficiently plentiful and evenly distributed to preserve the scale throughout. On the other hand, if it be desired to give an appearance of size to the figures, we may do so by subduing the sizes of the subsidiary parts of the building, always remembering that when figures are very much larger than life-size, they dwarf a building in a far less degree than when they are only a little larger. In the case of a small building in connection with a colossal statue, let the doors, windows, and other parts be slightly reduced in scale, and both building and statue will gain immensely by it.

In considering the relation between figure sculpture and architectural ornament, we are naturally led to attempt the definition of some boundary between the two. There are instances of figure sculpture in friezes and in similar situations where it is so closely in connection with foliated ornament that both are only parts of the same design. The case of detached statuary is totally different; and we should guard against any decorative confusion between such figure sculpture and its architectural accessories. Suppose, for example, that we have a statue of a military hero standing upon a pedestal with an enemy's flag lying at his feet, the entire composition being sculptured from one block of marble. Everyone will agree that the pedestal should be so designed as to harmonize with the statue; and it might contain sculptured war trophies, or representations of battle scenes, in relief. But if the folds of the flag were allowed to droop over the surbase of the pedestal, it is here contended that the treatment would be wrong. The object of the sculptor should be, not to represent a man in the act of posing upon a pedestal, but to produce a representation which may be placed upon a pedestal, or which may have a pedestal attached to it. Upon a similar principle, it is maintained that sculptured ornament which is contained in a panel surrounded with a frame of mouldings should never be allowed to stray beyond its boundaries. Neither drapery nor foilage should be permitted to overlap the mouldings lying outside the design. Foilage may overlap mouldings, but only as an enrichment, which is a part of the same design with the mouldings themselves. Modern French architects are continually transgressing this rule, and although they can often do so with pleasing results, yet experience has shown that such licentious practices sooner or later bring about a reaction in favor of a more severe treatment. Some of the most tasteful of modern French designs for monumental sculpture are, in our opinion, spoilt by naturalistic representations of climbing plants twined irregularly about the rigidly severe stone or marble crosses of which they form an incongruous part. While referring to monumental sculpture, attention may be drawn to the very low standard of art which holds its ground in this country in connection with this branch of design. The art seems to be in the hands of men who, with few exceptions, can only gratify the uncultured taste of the general public, without attempting to elevate or improve it. It is greatly to be wished that architects would turn their attention more frequently to this department of their art.

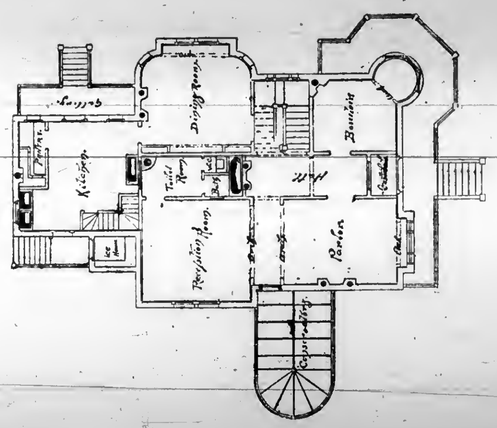
Architectural sculptured ornament must necessarily take a lower rank than detached statuary or figure subjects executed in relief. Yet its design must necessarily be governed by similar principles. The tendency towards realism in foliated sculpture is a prelude either to decay or reaction. Conventionalism, in sculptured foliage, is far more essential than in figure sculpture, especially when, as is usually the case, symmetry has to be studied. The subject of foliated ornament is a large one, and the limits of our space preclude its being exhaustively treated here. There are, however, a few leading principles which may be briefly noticed as apparently gaining recognition amongst modern designers. One rule often observed now, though frequently neglected in the past, is to avoid placing foliated ornament at the external angle of a building, where it is held to detract from the apparent stability. This leads us to an observation regarding supporting members decorated with sculptured foilage. It has been stated, in reference to Caryatides, that no natural object should be represented in sculpture as performing functions which it could not fulfil if real. In applying this principle to sculptured foilage, we need not shrink from the conclusion that a sculptured leaf ought not to be represented as supporting a load which could not be sustained by a natural leaf. In foliated caps, trusses, or other supporting members, it is here maintained that the structural forms should not exist complete in solid stone, whether concealed by the foilage or not. Although the whole be carved from one block, yet the foilage should be, so to speak, applied, in so far that the structure forms beneath are not cut into in carving the leaves. This rule has often been infringed, but never, we think, with propriety. Undoubtedly, one of the chief difficulties in the external application of sculptured foilage to architecture consists in a right adjustment of scale in relation to the various parts and their situations. While it is essential to impart a robust character to the lower part of a building, the upper portions being treated with a lighter style of decoration, yet the lower part, being nearer to the eye, demands greater multiplicity and refinement of details. To satisfy the eye of a close observer in the lower part of an edifice, without breaking up the breadth of effect at a distance; to make the upper portion appear lighter than the lower, while its ornamentation is in reality bolder—this is one of the most difficult problems which an architect is called upon to solve, and its difficulty is enhanced in the exceptionally lofty buildings which the increasing value of town sites makes it incumbent upon us to erect. Fortunately there is no lack of artistic workmanship at command. We have men around us who seem fully equal to the tasks imposed upon them by the exacting conditions of modern work; and in spite of all that may be said in disparagement of the English architecture of to-day, we may look with confidence to a future that promises to make the Victorian age worthy to compare with any architectural epoch since the Reformation.—Specialities.

QUEBEC ASSOCIATION OF ARCHITECTS.

The first meeting of the Council of the Quebec Association of Architects was held a few days ago, when a number of applications for membership were received.



VILLA AT ST. HYACINTHE, P.Q., FOR J. B. LALIME, ESQ.
MESSRS. DAOUST & GENDRON, ARCHITECTS, MONTREAL



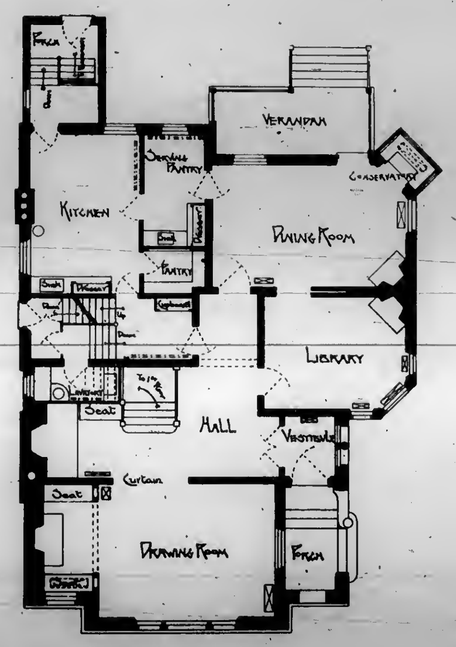
VILLA AT ST. HYACINTHE, P.Q., FOR J. B. LALIME, Esq.

Messrs. Daoust & Gendron, Architects, Montreal

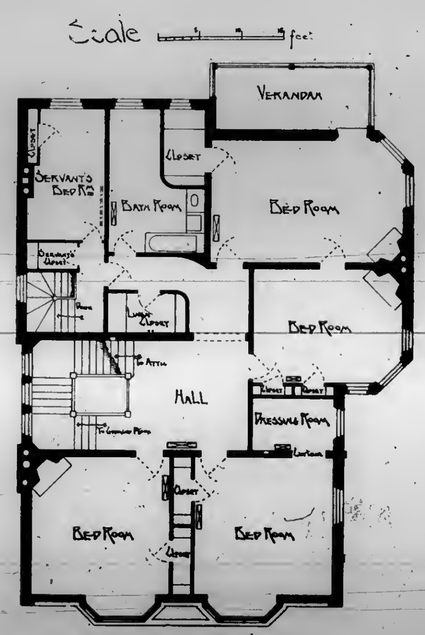
COLLINGWOOD MARKET
Destroyed by Fire Aug 13th 1890
Gibson & Simpson Architects
Toronto

PERSPECTIVE VIEW.

C. H. Keen Bond del



GROUND FLOOR



FIRST FLOOR

HOUSE IN QUEEN'S PARK, TORONTO, FOR D. E. THOMSON, ESQ.

MESSRS. LANGLEY, ARCHITECTS.

CANADIAN ARCHITECT AND BUILDER

FINE AND INDUSTRIAL ARTS · DECORATION · FURNISHING
CONSTRUCTION · SANITATION · ENGINEERING

VOL. III.—No. XII. TORONTO AND MONTREAL, CANADA, DECEMBER, 1890. PRICE 20 CENTS $2.00 PER YEAR.

—THE—

CANADIAN ARCHITECT AND BUILDER,

A Monthly Journal of Modern Constructive Methods,

(With a Weekly Intermediate Edition—The CANADIAN CONTRACT RECORD),

PUBLISHED ON THE THIRD SATURDAY IN EACH MONTH IN THE INTEREST OF

ARCHITECTS, CIVIL AND SANITARY ENGINEERS, PLUMBERS, DECORATORS, BUILDERS, CONTRACTORS, AND MANUFACTURERS OF AND DEALERS IN BUILDING MATERIALS AND APPLIANCES.

C. H. MORTIMER, Publisher,

14 King Street West, - TORONTO, CANADA.

TEMPLE BUILDING, MONTREAL.

SUBSCRIPTIONS.

The CANADIAN ARCHITECT AND BUILDER will be mailed to any address in Canada or the United States for $2.00 per year. The price to subscribers in foreign countries, is $2.50. Subscriptions are payable in advance. The paper will be discontinued at expiration of term paid for, if so stipulated by the subscriber; but where no such understanding exists, it will be continued until instructions to discontinue are received and all arrearages paid.

ADVERTISEMENTS.

Prices for advertising sent promptly on application. Orders for advertising should reach the office of publication not later than the 12th day of the month, and changes of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The "Canadian Architect and Builder" is the official paper of the Architectural Associations of Ontario and Quebec.

The publisher desires to ensure the regular and prompt delivery of this Journal to every subscriber, and requests that any cause of complaint in this particular be reported at once to the office of publication. Subscribers who may change their address should also give prompt notice of same, and in doing so, should give both the old and new address.

CLOSE OF VOL. III.

WITH the present number the CANADIAN ARCHITECT AND BUILDER completes its third yearly volume. To mark the occasion we have sought to make this number one of more than ordinary interest. The year which is about closing has been, so far as this journal is concerned, one of steady progress. The weekly intermediate edition for contractors commenced in February last, has been well received, and has been the means of substantially increasing the number of subscribers and advertisers, thus becoming one of the most important factors in the journal's success.

Our thanks are due to those architects, engineers, and others who have made it their medium of communication with contractors, and by doing so have assisted in making the paper valuable. It will take time to make this edition all that we desire it to be, but every week progress is being made, and the facilities for obtaining advance information improved. Contractors may therefore expect each issue for the new year to prove increasingly valuable.

It is the purpose to increase the number of illustrations and in other particulars to further improve the regular edition. In the short period of three years the number of illustrations has been doubled. The rate of improvement in the future must depend, as in the past, on the measure of support accorded the efforts of the publisher. Friends of the paper are requested not to lose sight of the fact that by exerting an active influence on its behalf, they can materially assist it to attain to a higher standard of excellence and value. There are various ways in which this assistance may be given, one of which is by referring to our advertising pages when requiring materials of any kind. These pages now form the most complete reference list obtainable of materials entering into architectural and engineering works, and as a rule, we believe the advertisers to be reliable. We have heard of an instance or two where an architect spent hours of valuable time and physical exertion in seeking to find where he might purchase certain articles which reference to the advertising department of this journal would have rendered unnecessary. We simply mention the fact in order to prevent its recurrence. Advertisers naturally desire to know that benefit has accrued to them from their advertisements. The publisher is also a partaker in this desire, since upon its fulfilment depends largely the extent of his advertising patronage. We therefore ask friends of this journal not only to make use of the advertisements appearing in it, but also in their correspondence with advertisers to mention it as the source of their information.

We fully appreciate the liberal use made of the advertising department of the paper. Commencing the new year with nearly double the number of subscribers appearing on our books at the close of 1889, we can offer advertisers in 1891 a wide and constantly widening constituency, with the benefits accruing therefrom.

We hope that increased use will be made of the columns of the CANADIAN ARCHITECT AND BUILDER for the expression of opinions on subjects coming legitimately within its scope. Finally we extend to every reader the wish for a "Merry Christmas and Happy New Year."

THE plumbing regulations of Toronto are continually being tampered with. One of the latest fads is the adoption for business premises of the New York method of placing the opening of the fresh air inlet in the sidewalk, the orifice being protected by a cast iron grating set flush with the pavement. During a recent visit to that city we examined the condition of these gratings, and found the majority of them either practically or *entirely* closed by accumulations of dust. Even supposing these gratings to be kept free, the constant dropping of dirt into the pipe beneath would result in the eventual stoppage at the bend, which in 99 out of 100 cases is found necessary in carrying the pipe to the connection behind the main trap. In some cases a sort of small iron sink is placed beneath the grating with the connecting pipe entering the side a couple of inches above the bottom. Even this device would soon choke up with sweepings, and in winter with snow, which, freezing, would completely block the orifice. We would a thousand times prefer the omission of the main trap than be compelled to use this unreliable device.

THE amended building ordinance of the city of Hamilton is, on the whole, a step in the right direction. The clause requiring the lodgment of plans with the Building Inspector will be the cause of considerable labor to the architect and expense to the client, if such plans, or copies thereof, are to be retained by the Inspector. The regulations limiting the proportion of the width of street which may be occupied, are good, as is also the stipulation that permission must be obtained from the occupant of adjoining premises before any material may be deposited in front of his property. The provision relating to the keeping of lights on all piles of building materials as well as excavations for drains, etc., is almost too sweeping in its nature, and yet, considering the careless manner in which heaps of building material and rubbish are left by the workmen, it is really a necessity. The fencing in of all building operations is also a necessity. It is simply abominable to have to run the gauntlet of splashing lime, swaying lumber and dropping bricks, which is so often the experience of passers by. It would be of interest to know what are the requirements referred to as Sec. 7, Chap. 41, regarding the erection and character of the buildings. These requirements are, in most of our cities, of a very low grade and far behind the times. We were surprised the other day to find that the Toronto by-laws had been amended to prohibit wooden breast-summers at shop fronts, requiring the substitution of rolled iron. Was there ever a more stupid regulation? In the case of a serious fire the un-

protected iron beam would give way long before one of wood—in fact before the latter would have charred to the depth of half an inch. It is high time for Toronto architects to rise in a body and insist upon the enactment of sensible by-laws based on modern experience and in line with the best practice in other places.

WE would bespeak on the part of architects and students a careful perusal of the report of the late meeting of the Council of the Ontario Association of Architects, which will be found in this issue. It foreshadows a great advance in regard to the education of our future architects, and we hope every principal will loyally second the efforts of the Council, by putting before his pupils the necessity of vigorously preparing the work set before them. It is high time for architects to awake to the fact that their profession does not stand on a par with that of medicine and law in the minds of the public, and that they have no one to blame but themselves. Now is the time to go forward and repair the mistakes of the past. Education is the first need of the day, and the profession in the older countries has begun to realize the necessities of the case. Canada must not be behind, and looks to Ontario, her richest province, to lead in this matter. Students must sturdily face the fact that unless they are prepared to work and study with assiduity, to spend their five years in an earnest struggle to fit themselves for their life-work, they had better enter a bank or go behind the merchants' counter.

The Council rightly decided to recommend that the members of the Association abstain from competing for the Montreal Board of Trade. That corporation has shown, by its replies to the protests of both the Quebec and Ontario Associations, that it has little desire to secure designs from Canadian architects. These organizations represent a very large percentage of the architects of any repute in both provinces, and had the Board honestly desired to be, even in a small degree, patriotic, they would have evinced some willingness to accede to the requests of these Associations. The building cannot be erected for double the amount stated in the conditions; this amount, ($275,000), plus 10%, has been arbitrarily fixed, and any design exceeding it in estimated cost will be strictly ruled out if the printed conditions are *honestly* adhered to. This, of course, would rule out all competitors who would have had all their trouble and expense for nought, and then the Board will be open to treat with some favored "dark horse," who will be unhampered by any limitations in regard to expenditure. No one but a novice, and no one with honest intentions will enter this competition expecting to produce a design worthy of the institution for the amount named. The inference might be therefore drawn that the competitors will be composed of two classes—fools and knaves. The members of the Toronto Architectural Guild at their monthly dinner on the 11th inst., decided to act in concert with the Associations in the matter.

COMPETITION FOR CHURCH DESIGNS.

THE Presbyterian Church in Canada has determined upon making an effort to improve the architecture of its churches, and with that object proposes to issue a pamphlet containing approved designs with letterpress explaining the same and also treating the question of church architecture from different points of view.

It is proposed to have a competition of designs for churches as per the list of requirements given hereafter, and to publish those designs which may meet with the approval of the experts. The plans and perspective only, with possibly one elevation will be illustrated, as it is not desirable to give sufficient drawings to allow of the design being made use of except through the author. The intention of the Committee of the Presbyterian Church which has this matter in hand is, that the author of a design which may be approved of by any congregation proposing to build shall be employed at the usual commission.

The following prizes, viz, $75, $50, and $25 will be given to the three best designs in order of merit, irrespective of the class under which they may be sent in.

The excellence of a plan will consist in the closeness with which the conditions have been fulfilled, the quality of the design and the inexpensiveness of erecting the building. No limit has been made as to cost in any class, as it is desirable that the designers should not be hampered except in so far that he must bear in mind that a good design which is inexpensive is superior to an equally good or even better design which will cost more money.

The experts, three in number, will be chosen by the Council of the Ontario Association of Architects and their report will be final in the matter.

The three designs which will be awarded the prizes will be chosen from among those standing first and second in the different classes. The experts will be instructed to favour the designs for the small and inexpensive buildings in preference to those for the large and costly ones.

The drawings are to be prepared in black and white to a scale of 8 feet to the inch. The plans and elevation in line only with windows blocked in or not as may be preferred by the designer. The perspective should be a thoroughly good drawing, and may be rendered as thought fit; but a large amount of extraneous matter should not be put in. The perspectives to be set up from a plan drawn four feet to an inch.

Bad or inferior drawings will not be illustrated, no matter how good the design may be, but an opportunity will be afforded the author to prepare or have prepared, suitable drawings.

Each competitor is requested to send in a short description of his design and to state clearly the material which he would use in its erection, together with a statement of cost. The experts will have the right to correct the estimated cost placed on any design as may appear to them just. The above statement is to be printed in the pamphlet along with the selected design together with the name of the author and his business address.

The following is a statement of the classes of buildings which are required to meet the wants of the average congregations in each of the classes in which it has been thought well to divide church buildings.

1st. Country church to seat from 150 to 200 persons, with one room to be used as vestry and library. Church to be heated with stoves.

2nd. Village church, capacity 250 to 300 persons, with one room to be used as vestry and library. Church to be heated with stoves.

3rd. Large village church, seating 350 to 400, with vestry and library. To be furnace heated.

4th. Small town church, seating 350 to 400 persons, with vestry or school room.

5th. Large town church, with seating capacity of from 500 to 600, with vestry, library, school room and kitchen.

6th. City church, seating from 600 to 1,000, with vestry, library, school room and kitchen.

7th. Large city church, seating from 1,000 to 1,300, with vestry, library, school rooms and kitchen.

In the last four clauses the designer will himself settle the method of heating and arrange same.

All designs to be sent in on or before the 14th day of March, 1891, addressed to the Registrar of the Ontario Association of Architects, Toronto.

THE QUEBEC CITY HALL.

THE largely advertised competition for the Quebec city hall culminated in the sending in of only six sets of designs three from Quebec, and one each from Ottawa, Woodstock, and Buffalo.

This result might easily have been predicted. The conditions imposed an enormous and useless amount of labor—eighth scale plans from sub-basement to roof, the latter to show "projections of eaves, skylights, scuttles, cresting, etc., in full;" sections of every separate portion of the buildings; isometrical elevations; isometrical or aerial perspectives; complete specifications; heating apparatus, size of mains, number and area of radiators.

Fatherly advice is given upon the minutest points, even to the blind nailing of the flooring boards; and then to crown all, this complicated mass of bricks and mortar, aggregating more than 2,0 0,000 cubic feet, is to be built for $200,000 less than ten cents a cubic foot—a sum insufficient for anything but the simplest commercial or residential building. We feel safe in affirming that twenty cents per foot will be found too small an allowance for the erection of a building of the character stipulated. No wonder the hundred eager applicants for copies of the conditions dwindled down to a corporal's guard.

The manner of adjudicating upon the designs is worthy of note. The designs were sent in under motto, of course, but oh, ye guileless architects, they were to be exhibited according to the conditions to the public for a week or more *before* the committee of adjudication began their work as assessors. The Mayor the Chairman of the Road Committee, and the City Engineer selected the jury, appointing Mr. E. Tache, of Quebec, "artist architect," Deputy Minister Crown Lands; Mr. Victor Roy, of Montreal, "practical architect"; and Mr. H. Stavely, architect.

The first prize was awarded Mr. Charest, Quebec; second, Porter & Son, Buffalo; and third, Mr. Peachy, Quebec.

According to the newspaper report, the first prize was awarded because it seemed "to have enlisted the sympathy of the jury by coming *nearest* to the mark in point of probable cost," although "*popular* suffrage seemed to point" to another design which the jury could not go on account of the probable cost.

Here, then, is another lesson for architects. When will the members of the profession learn to have sufficient respect to ignore all invitations to compete which are not drawn up in a proper manner? The labor imposed by the conditions in this case was excessive—practically preparing drawings sufficient for reception of tenders, the value, (even reckoning on a cost of only $200,000), being quite $5,000—while the other two prize designs were to be retained, the premiums only being paid for them.

The result also proves how utterly-useless it is to fix a limit of cost which is absurdly below what the work can be done for. In this case the jury selected the design which most nearly approximated the sum announced. If the jury had not been practical men, the probability is that "popular suffrage" would have selected the most showy design regardless of cost.

It is to be hoped that the establishment of Quebec's new Association of Architects will engender such an *esprit du corps* that corporations in the future will be compelled to formulate proper conditions of competition or be minus designs from competent and self-respecting architects in that province.

OUR ILLUSTRATIONS.

PROPOSED ATHLETIC CLUB HOUSE, TORONTO. E. J. LENNOX, ARCHITECT.

ROYAL VICTORIA HOSPITAL, MONTREAL.—H. SAXON SNELL & SON, ARCHITECTS, LONDON, ENG.

SEMI-DETACHED HOUSE IN NORTH STREET, TORONTO, THE PROPERTY OF MR. S. G. CURRY.—MESSRS. DARLING & CURRY, ARCHITECTS.

TORONTO ARCHITECTURAL SKETCH CLUB COMPETITION FOR "A COTTAGE BY THE SEA," DESIGNS BY "BRINY" (MR. T. R. JOHNSON), AND "PIETRO" (MR. ERNEST WILBY), AWARDED FIRST AND SECOND POSITION RESPECTIVELY.

ONTARIO ASSOCIATION OF ARCHITECTS.

A MEETING of the Council was held in the rooms of the Toronto Architectural Sketch Club on Wednesday and Thursday, December 3rd and 4th. Present: Messrs. Arnoldi and Ewart, of Ottawa; Rastrick and Edwards, of Hamilton; Blackwell, of Peterboro', and D. B. Dick, Curry and Burke, Toronto, and the Registrar, Mr. S. H. Townsend. The President, Mr. Storm, was unavoidably absent, much to his regret, through pressure of business engagements. In his absence the Vice-President, Mr. Arnoldi, took the chair.

A large amount of important business was transacted. The Toronto members who had been appointed at the August meeting to act as a Committee on By-laws, presented a draft report.

Messrs. Arnoldi and Ewart, the Committee on Education, presented a draft report of a comprehensive course of subjects to be required of students in the various examinations.

The Registrar reported that he had received 140 applications for registration, embracing almost every known person in practice in the province. After a scrutiny of the names the list was approved.

The draft by-laws of the Association were adopted after the insertion of several amendments and additions, and will be submitted to the Association for ratification or revision at the Convention to be held in February next.

The draft by-laws governing the Council of the Association were then carefully considered, and after various additions and amendments, adopted. These by-laws defined the duties of the various officers and the examiners.

The annual fee was fixed at $15 for resident members, (that is, resident in the County of York, and City of Toronto), and $10 for non-resident members, payable on or before the 1st of July of each year. If not paid until after this date, the fee to be $20 and $15 respectively. Student fees—Upon admission as a student, $5; filing indentures, $1; each examination, $1.

It was also resolved that no member of the Association shall retain in his office any student unless he is properly registered and in good standing in the books of the Registrar.

The Registrar reported that many students had not yet registered, and stated that the probable reason was through a misunderstanding as to the date up to which applications would be received, owing to the lapse of time between the passing of the Act and the appointment of the Council. It was therefore, on motion, resolved, that students be allowed to register up to the date of the first annual convention in February; and that notice be sent to all registered architects requesting them to draw the attention of their students to such extension of time.

Mr. Curry presented a proposition made by representatives of the Presbyterian Church with regard to the issue of a publication having in view the improvement of the design of Presbyterian church edifices. It was resolved "That having heard with much pleasure this proposition, a competition, or series of competitions, be instituted under the auspices of this Association, the Council hereby approving of the object desired to be attained, and that we consent to appoint a judge or judges for these competitions."

The arrangements for the forthcoming Convention were then discussed. It was decided to omit the holding of an exhibition of drawings, with the hope that a thoroughly representative one may be held in 1892.

Messrs. Storm, Dick and Curry were appointed a Committee on Programme and Arrangements for the Convention.

Messrs. Arnoldi, Burke, Blackwell and Edwards were appointed a Committee on papers to be presented, Mr. Arnoldi being Chairman, with instructions to report to the Registrar not later than Jan. 15th.

Mr. Curry read a communication from the Secretary of the Quebec Association regarding the proposed competition for the Board of Trade offices in that city.

The following letter to the Secretary of the Montreal Board of Trade was drafted and ordered to be sent forthwith:

GEORGE HADRILL, ESQ., Secretary Board of Trade, Montreal.

DEAR SIR,—The Council of the Ontario Association of Architects has had under consideration the conditions of competition for the proposed Board of Trade Building in Montreal, and has decided to recommend all members of the Association to refrain from competing for the following reasons:

1st. That the board has selected six architects resident in the United States and agreed to pay them $300 each to send in competitive designs, and has not seen fit to select six Canadian architects in like manner, but has decided to award $300 each to the authors of the six Canadian designs placed highest in order of merit by the expert. Under such an invidious distinction the most capable architects will not compete as the competition really resolves itself into a contest for the paltry sum of $300 and the slight possibility of obtaining the commission to erect the building. If your board had selected six Canadian architects of the highest standing, the competition would have been one between six representative architects resident in the United States, and six resident in Canada, and would have been likely to meet with a hearty response from Canadians, but under the conditions advertised the most capable architects in Canada will not compete, and the competition will really be between six firms of architects in the United States—some of them of the highest standing—and such men in Canada as are prepared to compete for the $300, knowing that the best men in the profession in Canada are not competing.

2nd. That the amount appropriated is utterly inadequate for the erection of the building, and that any design which could be carried out for any sum near the amount named would be absolutely certain of rejection.

Very truly yours,

S. H. TOWNSEND, Registrar.

The report of the Committee on Education was taken up clause by clause, and finally adopted as follows:

Preliminary Examinations.—Candidates for admission as pupils or students in the office of a registered architect, must have passed the examination of the second form of a High School or Collegiate Institute; or, as an alternative, the entrance examination to a High School or Collegiate Institute, and an examination in mathematics and either French or German equivalent to the second form as above.

Intermediate and Final Examinations.—In addition to the preliminary examination, every student shall be required to pass three other examinations, two of which shall be intermediate and one final. The first intermediate shall be taken not less than one, and not more than two years from the time of passing the preliminary; and the second intermediate not less than one nor more than two years after passing the first intermediate. The final examination, admitting to registration as an architect may be taken at the expiration of the term of the student's indenture, or any time thereafter as he may elect.

First Intermediate.—Each candidate shall at least one month prior to the date fixed for the first intermediate examination, send to the Registrar the following drawings which must be certified as his own work:

Two sheets of the Orders of Architecture; two sheets of the Early English, Decorated and Perpendicular Periods; two examples in each period, such as a door, window or arcade—shown by plan, section and elevation; one sheet of Mouldings and Ornament, embodying examples of each of the above Periods.

The topics only of the examinations were decided upon, viz.: Elements of Construction, History of Architecture, Mathematics, Technical Subjects, Applied Mechanics.

Second Intermediate.—Drawings under the same conditions as first intermediate; one sheet of drawings of Ornament, freehand, from the round in outline; three sheets of drawings, measured from existing examples; one sheet Detail Construction of Roof-truss, with joints and iron work drawn to a large scale; one sheet showing construction of wooden floors, wood and iron, and iron and terra cotta; two sheets, Stone, Brick and Iron Details; two sheets, Details of Joiners' Work.

History of Architecture; Characteristics of Styles; Strength of Materials; Graphic Statics; Structural Iron Work; Mathematics; Electricity.

Final.—Set of Drawings, Details and Specifications of Building of Character to be designated, (worked out at time of examination); Nature and Properties of Materials—Limes, Cements, Stone, Brick, Timber; Foundations; Practical Knowledge of Building Trades; Heating and Ventilation; Applied Mathematics; Sanitary Science; Architectural Jurisprudence.

Honor Course (optional).—Levelling; Bills of Quantities; Acoustics; Modelling.

The members of the Council resident in Toronto were appointed a Committee to compile a list of text-books required for preparation for the above examinations, and to define and add to the list of subjects as may be thought advisable.

It was decided that students may go up for the two intermediate examinations to such localities as may be designated by the Council from time to time, as may be required. The final examinations, however, to be held in all cases in Toronto. The examinations to be held in April of each year, all candidates giving one month's notice to the Registrar of their intention of presenting themselves—the fee in all cases to accompany the notice.

The Council then adjourned.

ANNUAL DINNER OF THE TORONTO ARCHITECTURAL SKETCH CLUB.

THE first annual dinner of the Toronto Architectural Sketch Club was held on Thursday evening, December 18th, in Webb's restaurant. The affair passed off very pleasantly. The chair was occupied by the President, Mr. S. G. Curry. Seated around the table were the following gentlemen: Messrs. S. H. Townsend, Frank Darling, Edmund Burke, W. S. Thomson, J. P. Murray, Samuel Jones, John Gemmell, C. H. Mortimer, A. H. Gregg, C. H. Acton Bond, A. Clarence Barrett, Harry Simpson, Herbert E. Matthews, Ernest Wiiby, Murray A. White, Bert Westwood, C. J. Gibson, A. F. Cuerrier. R. Wilson, G. Clapperton, G. Moir, Joseph Yorke, G. Self, J. A. Radford, Edgar B. Jarvis, F. S. Baker, J. W. Siddell, J. A. Pearson, Alf. Broadhurst, A. C. Cassels, C. J. Read, Herbert Eddis, J. J. Woolnough, J. Worsley, J. Walker, J. G. S. Russell, T. R. Johnson, C. F. Wickson, C. J. Lennox, Henry Sproatt, D. W. Kinghorn, J. N. Gander, Fred. Armstrong, Arthur Dinnis, John Ritchie, jr., J. F. Brown, Geo. W. Gouinlock and C. J. Gibson.

The discussion of the excellent *menu* engaged the full attention of the company for upwards of an hour, when the toast list was entered upon, the health of Her Majesty the Queen being followed by the singing of the National Anthem.

Mr. Curry in proposing the toast of "Canada," said he was glad to know that this toast was taking its proper place at our social gatherings. It was a right thing that they should remember always that they were Canadians. (Applause). If they expected ever to be a great country and a great people, they must think well of themselves. There was a too prevalent idea on the part of some of our citizens to look upon Canada as an inferior place. If those people thought this a poor country, why did they stay here? Unfortunately this question had become in some respects a political one. There were to-day in Canada two parties, both of which claimed to be loyal to the country. Possibly they were. But it must be admitted that there was on the part of one a desire to win place and power by more or less disparaging our country. That should be discountenanced by every true Canadian. Country should be put before party every time. He was sorry to observe that Sir Richard Cartwright spoke recently of Canada as a breeding ground to furnish men for the United States, and that he said that one million Canadians were citizens of the United States. Of course Sir Richard claimed that the National Policy was to blame for this, though that was a question not to be argued on the present occasion. He believed that fewer of our people would leave Canada if they were given the opportunities they should receive. It was well enough for Sir Richard Cartwright to say that Canadians can win high positions on the other side, but it was a strange thing that if that was so they could not succeed at home. It was the old story of a prophet not without honour save in his own country. As Canadians, we should stick up for our own country. Even if it were a barren land we should be proud of it, but much more so when it was the fact that few countries could compare with this. He did not think there was a people that stood more by their country than the Scotch, and yet there were many finer lands. Who ever saw a Scotchman sneer at his country? The Schotchman loves the highlands—especially the Highlander. (Applause and laughter.) As Canadians we should be always Canadian. We should never think it a clever thing to run down our country. It might be true that we are not so progressive as some other people in some ways, and possibly that was an advantage. (Applause). Canada had shown a remarkable amount of progress. We have the best canal system in the world and the best railway system. Nothwithstanding that some parties said the C. P. Railway would never earn sufficient to pay for the axle grease, the company was able to pay a dividend upon the enormous capital required to build the road. We must try to develop a national spirit. We must develop our resources. It will never do for us to be simply producers of crude materials for our neighbors. By that means we might become wealthy, but we would never become an independent people. To develop national life, we should encourage art, for the love of the beautiful had much to do with the formatinn of character. We should strive to be just as cultured as any people. Canada had no reason to be ashamed of her men of letters, although at one time it was declared that we could never have a national literature, and the time must come when art will also occupy a high place. He asked the company to drink to the "Prosperity of Canada."

The toast was drunk with great enthusiasm, and was followed by the singing of "The Maple Leaf."

The Chairman announced that the next toast was that of the "Ontario Association of Architects." He coupled with this the name of the Secretary, Mr. S. H. Townsend. He regretted that Mr. Storm was unable to attend. He read the following reply which had been received to the invitation to the President:

"Mr. Storm regrets exceedingly that an important engagement made some days ago will deprive him of the pleasure of attending the Toronto Architectural Sketch Club supper. He desires at the same time to express his appreciation of the honour done him by the kind invitation, and to convey his best wishes for the success of the Club and the prosperity of the individual members thereof."

Mr. Townsend replying to the toast, which had been very heartily received, thanked the company for the way they had honoured the toast and regretted that Mr. Storm was unable to be present to reply. It had been well said by Mr. Curry that as Canadians we should be proud of our country. After having seen a great deal of the world he was of opinion that Canada had reason to be proud of her architects. The best buildings in the country were the work of Canadians. (Applause). There was a feeling among a certain class of the community that Canada could not produce architects. The buildings which this country could show were a sufficient refutation of that statement. Canadians could point to Toronto University as the work of a native which could compare favorably with anything on the continent. Many of our other buildings of less import were not inferior in architectural beauty and utility to any that could be pointed out on this continent.

Mr. Samuel Jones.—The Bank of Montreal is a Darling. (Laughter).

Mr. Townsend was glad to be able to say that Canada was the first country to recognize the architect legally and give him a standing. The Act of Incorporation did not give the architects all they desired, but enough to make a good start upon. He had no doubt that in the future they would be able to get additional legislation which would place the profession in the position it should occupy. With this in view it became the members of the profession to strive to elevate their ideas of professional honor and to train themselves for the high position they were destined to occupy. (Applause).

The Chairman, in proposing the next toast—"Sister Societies"—welcomed the representatives of the Students' Art League who were present. He would ask Mr. Thomson, president of the League, and Mr. Jones, the secretary, to respond. The League deserved a considerable amount of praise. They were a society composed of young men who had banded themselves together for the object of studying art and learning how to draw. This Art League was largely the outcome of Toronto's lack of an Art School. If Toronto had an Art School the Art League would never have come into existence. Fortunately, we had such a League, and it was doing a good work. It was to be hoped, notwithstanding, that Toronto would soon have an efficient Art School. In the past the Art School had done harm rather than good, and it was a matter of congratulation that the state of the present organization was such that it was practically dead. He wished the Art League every success.

Mr. Thomson, in responding, recognized in the Sketch Club co-workers with the Art League. They were both part of the art training system which the young men of Toronto were building up. The Sketch Club was the outgrowth of an idea that was germinated in the Art League. He hoped the two organizations would work together harmoniously and for their mutual benefit. The development of national feeling, as had been pointed out by the President, was a great want in this country. If it was true that Canada was supplying men to the United States it was a high compliment to this country. But why did such a state of things exist? There was very little here to keep the young men in the country. The Government did not encourage art, but gave a paltry grant of $400 a year to this important branch of education. To illustrate the way Canadians were appreciated abroad he mentioned the fact that a young Canadian had been sent to Europe by he architects of the World's Fair, Chicago, for the purpose of selecting the best ideas for the construction of the necessary buildings. It was a mistake for the Government not to educate the people to appreciate art. Let them do this and encourage national feeling and the young men would not be compelled to go abroad.

Mr. Samuel Jones said that if the Architectural Sketch Club sprang from the Art Students' League the babe had become bigger than its father. This was another example of the national vitality of the Canadian character and of its ability to "get there." There was in this country a better element to work upon than in the United States or the old land. He was sorry that politicians were more inclined to copy the evils of the old world than to copy the advantages. The sudden growth of the Sketch Club was proof of the future that was in store for art. Out of evil comes good, and out of the want of an Art School had sprung these two organizations. It should not be long before they should join their forces and see that there is established in this city a Government Art School worthy of the name. In the coming contest with the authorities to re-establish the school upon a proper basis lovers of art look with confidence for the assistance of the Architectural Sketch Club and the Art Students' League. Although we have good material to work upon, it is necessary to success that we should obey the economic laws. There was no use breeding architects or painters if the public taste for their work was not cultivated. It was a lasting disgrace that in a civilized community like this art was at so low an ebb. A young man would not stop in Canada even from patriotic motives when by going abroad his work was better appreciated and he received better pay for it. There must be a new missionary crusade. We want such a man as Ruskin to inspire us to go out as missionaries among the plutocratic aristocrats and teach them art. Here in Toronto the best pictures were sold at too low a figure. The highest class of pictures were sold at a much less profit than the worst class. The people pretended to want art—they simply wanted art pretence. They would rather pay three-quarters of a dollar for veneer than one dollar for solid mahogany. He was more than shocked at what was called the civilization of the United States. They knew little of art, and their lives were spent in a fevered haste in trying to scrape into their own pockets somebody else's dollars. He was glad to know that the women were taking an interest in art, and warned the architects that they would have to look to their laurels as the other sex would be invading their sphere. (Applause).

The Chairman then invited the company to fill their glasses and drink to the "Building Interests."

Mr. G. Moir in responding assured those present that the builders were not so bad a set as some people would make them out to be. There was a feeling entertained by a few that the builders were little better than rogues, and that they must be well looked after all the time. He thought that was not quite true.

A voice—The builders are bricks.

Mr. Moir had found from an experience of 20 years that when a builder did right he would not have much trouble with the architects. He was glad to be able to say that nearly all the finest structures in the city were the work of native builders. Contractors were glad to do good work when the architects supplied good designs, which the architects, of course, always did. The Builders' Society had tried to secure the adoption of a new form of tender, but they had not succeeded very well so far. Some firms would agree to the proposal, but others would not. He hoped that eventually they would arrive at an agreement. From the intellectual faces he saw around him he was sure that the architects of the future would not be inferior to those of the present.

Mr. John Ritchie also replied by singing "Jack's Yarn."

Mr. Joseph York said that the labour question often gave the builders a great deal of trouble. Sometimes a labor difficulty often led to great pecuniary loss. He would like to see an uniform tender adopted that would be satisfactory to all. The buildings of Toronto compared very favorably with those he had seen anywhere else. He hoped that as time went on Canadians would have more money to expend on buildings.

The Chairman said that as to the quality of buildings in Toronto he believed it was superior to that of any city on the continent. The average building in Toronto was a great deal better than the average building in any city in the United States. Look at the Auditorium in Chicago and you will find the jambs so crooked that you could see the defect across a ten acre field. Even in the Library at Boston there were defects. It was astonishing that expensive buildings in the United States were finished in such a rough and ready way. The builders of Toronto were deserving of a great deal of credit, and the responsible builders were desirous of giving full return for every cent they received. They were not all like this. He met one builder who told him that it was the architect's business to see that the builder did his work, and the builder's business to see that he did not. (Laughter). He did not believe in that. If the architect was to be turned into a detective, it would make the work very expensive. The contractor in the present state of the labor market had a difficult task. It was well enough to say when workmen were dissatisfied, "get others," but that simply meant to get others just as bad.

The Chairman then proposed the toast of "Our Guests," and called upon Mr. J. P. Murray to reply.

Mr. Murray said he was glad that the architects were taking an interest in art. The object of the present gathering was that they might do some interior decoration. (Laughter.) He had been glad to hear the patriotic remarks of the Chairman. He was proud of being a Canadian—an Irish Canadian and a British Canadian. He thought architects would do well to see that sky windows were made so that they could be more easily handled for ventilation purposes. The placing of windows was an important matter. Looking at the Board of Trade buildings he noticed that some of the windows had been placed in such a way as to detract from the utility of the building. Another important matter he desired to draw attention to was the building of stairways. So narrow had the stairs of the Bank of Commerce been made that the other day a portly costumer was unable to ascend them and the manager had to be called down to see him. (Laughter).

The Chairman proposed the toast of "The Ladies," and called upon Mr. A. Clarence Barrett. Mr. Barrett in a few well chosen remarks passed an eulogy on the fair sex which drew forth much applause.

The Chairman said the next toast was that of the CANADIAN ARCHITECT AND BUILDER. This paper was a benefit that few could properly estimate. In the past it had done exceedingly well considering the field that is open for it in Canada. Of course there were people who said the paper should be this, or should be that, but these people who were freest with advice gave it the least substantial assistance. The CANADIAN ARCHITECT AND BUILDER compared very favorably with the architectural papers of England and the United States when they were of similar age, and the time would come when it would rank with any publication of the kind in the world.

The toast was drunk with enthusiasm, the company singing "For it's a jolly good journal" to the tune of "He's a jolly good fellow."

Mr. C. H. Mortimer in replying thanked those present for the kind and hearty manner in which the CANADIAN ARCHITECT AND BUILDER had been referred to.

The toast to "The Press" was responded to by Mr. J. A. Radford.

The company dispersed after singing "Auld Lang Syne."

During the evening an excellent musical programme was rendered. Mr. J. J. Woolnough presided at the piano. The programme was as follows: Instrumental duet, "The Last Chord"—Messrs. J. Worsley and J. J. Woolnough; Song, "The Gay Hussar"—Mr. Herbert E. Matthews; Song, "Our Architectural Wheel"—words by Mr. Alf. Broadhurst, music by Mr. J. A. Radford; Recitation, "The Street Minstrel"—Mr. J. A. Pearson; Song, "The Fishing Excursion"—Mr. J. Worsley; Song, "In Sweet September"—Mr. E. B. Lucas; Song, "He's in the Asylum Now"—Mr. J. J. Woolnough; Song, "She Was"—Mr. H. Simpson; Song, "A Freshening Breeze"—Mr. George Self.

INCEPTION AND PROGRESS OF THE ONTARIO ASSOCIATION OF ARCHITECTS.

ON the third day of October, 1887, nine architects of the City of Toronto met in Mr. W. G. Storm's office and determined to form a society with the object of advancing the interests of architecture, and to bring about a better feeling between the members of the profession. The attempt had been made before with some degree of success, but owing to a number of causes the society then formed died a natural death in its infancy, leaving behind little or nothing to keep its memory green except a few debts which were liquidated by the officers without any assistance from the members. But the society formed on the third of Oct., 1887, has had a very different course, as it is in a most active condition at the present date, after an existence of more than three years. In proof that it is in active working order, we may say that it has twenty-four members in good standing and a cash balance of nearly $750.

It is not, however, of the Toronto Architectural Guild that we desire to speak, but of the formation and existence of the Ontario Association of Architects. On the 8th of Nov., 1888, the members of the Toronto Architectural Guild made their first move to form a permanent Association by appointing the following committee, viz.: Messrs. D. B. Dick, Strickland, Burke, Lennox, Storm, Townsend, Langton, Darling, Langley, Gordon and the Secretary (Curry), to prepare and submit a scheme to the Guild.

As the result of the Guild's efforts, the Ontario Association of Architects was formed on March 21st, 1889, at the Queen's Hotel, Toronto. About sixty members of the profession attended from all parts of the province, who, with but one or two exceptions, became active members of the Association.

After the meeting had been properly organized, it took into consideration the By-laws which had been prepared by a special committee, and passed them with some slight changes. The next business was the election of officers, who were as follows: W. G. Storm, Toronto, President; Geo. Durand, London, first Vice-President; E. King Arnoldi, Ottawa, second Vice-President; and Jas. Balfour, Hamilton, third Vice-President. S. H. Townsend, Toronto, was elected Secretary, and D. B. Dick, Toronto, Treasurer. The following members were elected to the Council: Edmund Burke, Toronto; J. Belcher, Peterborough; Jos. Power, Kingston; Mulligan, Hamilton, and S. G. Curry, Toronto.

In the evening the visitors were entertained at dinner at the Queen's by the members of the Toronto Architectural Guild, and there was formed an Association of Architects which in the short period of one year was to become the first incorporated Association of Architects in the world.

During the summer months of 1889 the membership of the Association increased to ninety members. In Nov. of that year the first annual convention was held in the Canadian Institute building, Toronto. The convention was in every way a success, the exhibition of drawings being very much superior to what was expected. At this meeting it was determined to apply to the Legislative Assembly of Ontario for an Act of Incorporation. A draft of the proposed Act was submitted and adopted, and nothing more could be done until the meeting of the Ontario Legislature. On the evening of the last day of the convention the visiting members were entertained at dinner by the Toronto members at Harry Webb's restaurant. One of the toasts of the evening was "Success to the proposed Act of Incorporation," but while many drank to the toast, by far the greater number looked upon the attempt to secure incorporation as a forlorn hope. The Act was submitted to the Ontario Legislature at its last session and became law, but only after many changes had been made in the wording. The Government had deemed the measure of such public importance that it had made it a Government Bill. Some opposition was made to the Bill by members of the profession who were afraid that it might injure them in some undefinable manner. To what extent this opposition affected the Bill it is hard to say, as the Committee were not aware at the time that there was any opposition to the passing of an Act of such great advantage to the profession in its desire for advancement. After some delay on the part of the Government the Council was gazetted. The members are Messrs. W. G. Storm, F. J. Rastrick and D. B. Dick for three years; King Arnoldi, W. A. Edwards and David Ewart for two years; and Edmund Burke, Wm. Blackwell and S. G. Curry for one year. The names of the old Council which had been elected by the Association were given to the Government from which to select the new Council, but of the number they only appointed six, selecting the balance of three from among the members of the Association. The Council met and organized according to the proclamation, and did such business as was possible on the occasion of their first meeting. A second meeting was held by the Council on December 3rd and 4th. At this meeting draft by-laws for the Association and Council were considered. The qualifications necessary for enrollment as a student were also settled, as well as the examinations which he would be required to pass before he can become a properly qualified member of the Association. Another meeting of the Council will be necessary before the annual meeting in February to give the final touches to the above measures.

The first annual meeting of the incorporated society will take place on the third Tuesday in February, when a very full attendance of the members is expected. The success of the Association is assured if ordinary care is observed in electing suitable men on the Council. Let us hope that the members of the Association will have its interests sufficiently at heart to select capable and energetic men to this position.

"CANADIAN ARCHITECT AND BUILDER" COMPETITION FOR A CITY HOUSE.

THE publisher of the CANADIAN ARCHITECT AND BUILDER invites competitive designs for a city house to cost not more than $4,000.

The house is to be erected by a young architect having an income of about $2,500 per annum and a family of three young children.

The house is to be placed on the south side of the street. The lot is 30 feet wide and the houses on either side are built up to within 2½ feet of the dividing line. They are at a uniform distance of 15 feet from the street line, and 55 feet deep including wing, and of the same class as the one in competition.

In judging the designs the disposition of the various rooms with regard to convenience and especially direct sunlight will be taken into consideration. Good planning will receive higher marks than good elevations, *i.e.*, a good plan having poor elevations, compared with a good elevation set up from a poor plan.

The city by-laws will not permit of wooden construction below level of first floor, while above that it must be either plastered or tiled.

The heating will be by hot air and position of registers should be indicated.

Each competitor will be required to give a concise description of his design, stating the materials he proposes should be used in its construction.

The first premium will be $15; second $5; third one year's subscription to CANADIAN ARCHITECT AND BUILDER. A premium of $5 will also be given for the best perspective sent in.

Drawings must be made on sheets of heavy white paper or bristol board 14 x 20 inches in size, and must be drawn sufficiently coarse to allow of their being reduced to one-half the above size. Drawings must be made in *firm, strong lines*, with pen and *black* ink. No color or brush work will be allowed. Each drawing must be marked with the *nom de plume* of its author, and the author's name, *nom de plume* and full address, enclosed in sealed envelope, must accompany each drawing sent in.

Drawings must reach the office of the CANADIAN ARCHITECT AND BUILDER, 14 King street west, Toronto, not later than the 5th day of February next.

The right is reserved of publishing any design sent in. All designs will be returned to their authors within a reasonable time after the competition is decided.

The decision as to the respective merits of the designs submitted will be made by a committee appointed by the Architectural Guild of Toronto.

All architects practising in cities are debarred from this competition.

We regret to announce the death in England of Mr. A. D. Steele, late of Hutchinson & Steele, architects, Montreal. Mr. Steele gave up business in Canada a short time since under the orders of his doctor and started for England, hoping to regain his health. Mr. Steele was very highly thought of in Montreal, being a quiet unassuming gentleman, and his many friends will regret to hear of his sudden demise.

Fireproofing having become a necessity it is very gratifying to note Canadian enterprise in the success of one of the many industries of the Rathbun Co., Deseronto, Ont. We refer particularly to their porous terra cotta fireproofing and hollow tile. This industry has been in existence about two years, and we learn that besides many others the following prominent buildings have used their fireproofing: Bank of Commerce, Toronto; Board of Trade, Toronto; Canada Life Building, Toronto; The Biological Library, Toronto; The Printing Bureau, Ottawa; The Royal Insurance Building, Montreal; The Sun Insurance Building, Montreal; The Canadian Pacific Windsor street Station, Montreal, (in part); the St. Lawrence Sugar Refinery, Montreal; The Telephone Building, Montreal; The Kingston, Napanee & Western Railroad Stations; G. A. Drummond's Residence, Montreal, (in part); Napanee Post Office, Ontario; The Nickel Wing of the Kingston Hospital.

CANADIAN BUILDING STONES.

THE following report prepared by a Committee of the Quebec Association of Architects on the nature of the building stones in what is known as the Lake St. John District, will no doubt prove of interest and value to Canadian architects and builders :

To the "Province of Quebec Association of Architects," and all whom it may concern :

The undersigned, at the instance of the Quebec Local Association of Architects, have the honor to make the following report on the quarries now open on the Quebec and Lake St. John Railway line ; the said quarries having been visited at the invitation of the Railway Company, on the 13th and 14th inst., in company with other architects, stone cutters and others.

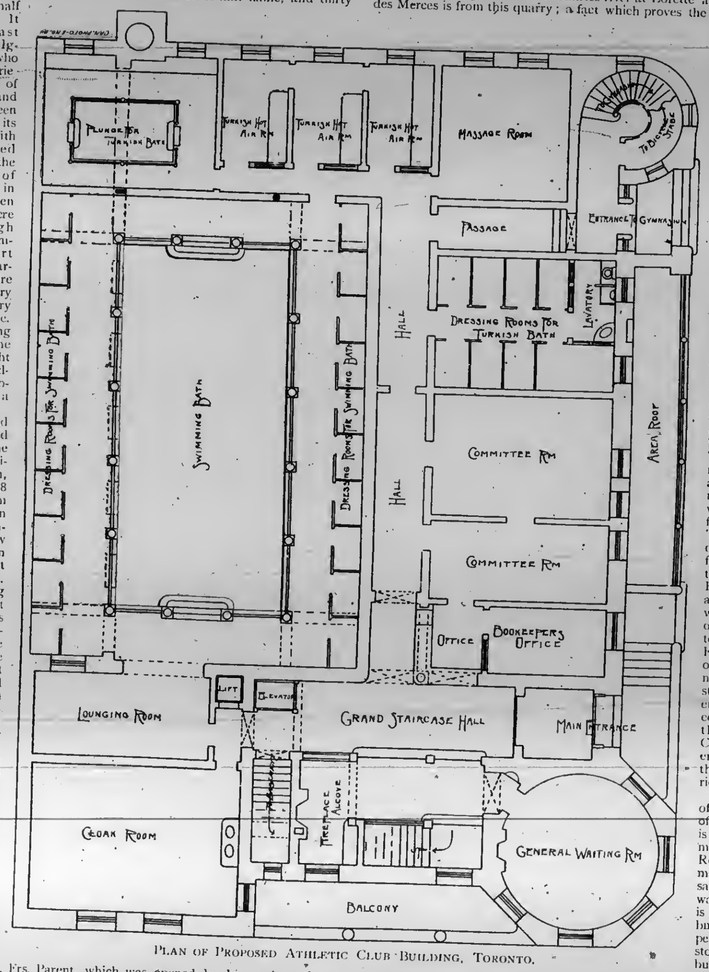
1. The first quarry visited and called "Bourg-Louis" quarry, is situated at a half mile distance on this side of the station of that name, and thirty miles and a half from Quebec. It was opened last summer by M. Ignace Bilodeau, who is also the proprietor. A number of bridge piers and culverts have been constructed in its neighborhood with stone extracted from it. All the stone paving of Dambourges hill in this city has been drawn from there since. Although opened for a comparatively short time, the appearances at present are that this quarry will furnish a very fine building stone. The predominating colors in it are the red, blue and light grey, which blending together, produce sometimes a good effect.

2. The second quarry is situated at a distance of one mile from the Riviere a Pierre station, which is itself at 58 miles distance from Quebec. It is on the slope of a mountain and a few arpents only from the main road. It was opened by M. Frs. Parent during the course of last summer, but it is owned by M. Voyer. We find there some layers of stone of above three feet in thickness and very regular, which could furnish material for monolith columns and other stones of large dimensions. The stone is coarse grained, of a grayish color admixed with red, and presents a brilliant surface owing to the feldspath which it contains ; the effect is very fine.

3. About one-third of a mile further from this quarry, and on the same mountain slope, we find the quarry owned by M. Frs. Parent, which was opened by him only a few weeks ago. The stone from this quarry has all the qualities which characterize its neighbor. It is being employed at present in the construction of a house for the Hon. Chas. Langelier at the corner of Grande-Alley and Conrey streets, in this city. The string courses dividing the stories will probably be polished, as the stone gives every indication of lending itself well to the process. Stone from this quarry and the previous one has been used in the facings of Chevalier Baillarge's house on St. Louis street (on the site of the old Montgomery house) and the adjoining one owned by M. Hogan, nevertheless the eye cannot detect any difference in the appearance of the two stones, a fact which proves their identity. As the quarry is situated at a certain distance from the railway line, the company will construct a siding to facilitate transport.

4. At half a mile distance from Miquick river station, and at 74½ miles from Quebec, we find M. Bolanger's quarry, which is being worked for a couple of years past. We can obtain here stones of very large dimensions, which the proprietor uses in the construction of monuments and constructions of all kinds ; it can be easily polished and cut in any form. The Cartier-Brehoeuf monument erected on the shore of Lairet river in 1889 is from that quarry, also the heavy copings and pillars around the Court House in this city. This stone is spotted with black and bluish-gray, and has a very fine appearance.

5. Further on, and at a distance of 178½ miles from Quebec and 1½ miles from Chambord station, on the littoral of Lake St. John on the Chicoutimi and St. Alphonse embranchment we arrive at the quarry owned by M. H. J. Beemer, the constructor of the Quebec and Lake St. John railway line. As in the case of the Bourg-Louis and Miquick quarries, this one is close to the railway line, and can consequently be easily and cheaply worked. The stone is calcareous and is stratified, as are all sedimentary stones ; the thickness of the beds varies from one to two feet. As this stone can be extracted in large blocks, it is found very advantageous for the construction of bridge piers and other similar works, when stones of large dimensions are required. Its color is of a bluish gray, with a very fine grain and a texture better suited to rock work than to finely cut faces. The masonry work of the bridges on the St. Charles river at Lorette and that of Riviere des Meres is from this quarry ; a fact which proves the superiority of the stone in construction of that kind, since the contractors have gone to such a great distance to obtain it.



PLAN OF PROPOSED ATHLETIC CLUB BUILDING, TORONTO.

6. At Roberval, a distance of 190 miles from Quebec, and also near the shore of Lake St. John, we find there other quarries of a calcareous nature, similar to the Chambord quarry, but of a finer and more homogeneous grain, which renders this stone more fitted to finely cut work than the others. One of these quarries is at a distance of about 4 miles on this side of Roberval station and is owned by a M. Ouellet. The stone cornices and window and door trimmings of Hebertville Church are from this quarry. The other two quarries are at a few arpents distance only from Roberval church and near the railway station ; one of these belongs to M. Ephrem Brassard and the other to M. Menard. All the stone which was employed in the construction of the Ursulines Convent at Roberval comes from these two quarries.

7. A fine quarry of granite (gneiss) of a reddish color is seen at about 4 miles distance of Roberval, in a cut made for the passage of the railway ; this quarry is not worked, but by the appearance of the stone we cannot but think that it would furnish a fine building stone. At many other points on the railway line, where cuts have been made for the passage, can be seen further indications of a good stone for constructing purposes and street paving. With the exception of M. Beemer's quarry at Chamford, and those of Roberval, which are all of a calcareous nature, the other quarries mentioned are of granite (gneissic) formed by the agglomeration of three minerals : feldspath, mica and quartz.

As already referred to, the granite show varied tints, but the proportion of the three minerals not being the same in each, it follows that the stone in some quarries is much harder than that of the others, according to the greater or less proportion of quartz contained in each kind. Notwithstanding this fact, all these granites can be cut with ease and give a fine polish. Their great durability renders their adoption most advantageous, in spite of their being a little more expensive to cut than lime stones, and as the means of extracting and transporting them are not costly it is clear that we should prefer them to lime stone ; they also possess a greater variety and richness of colors.

The calcareous quarries of Chambord and Roberval furnish a stone of an earthly texture, course grained and of a rough surface when broken. The

W. A. EDWARDS, Hamilton, Ont.

F. J. RASTRICK, Hamilton, Ont.

WM. BLACKWELL, Peterborough Ont.

MEMBERS OF COUNCIL OF THE ONTARIO ASSOCIATION OF ARCHITECTS,
APPOINTED BY THE PROVINCIAL GOVERNMENT.

C. Clift, Secretary, Montreal.

A. T. Taylor, F.R.I.B.A., R.C.A., Montreal.

J. F. Peachy, Quebec.

W. E. Doran, Treasurer, Montreal.

E. N. Berlinguet, 1st Vice-President, Montreal.

J. W. Hopkins, R.C.A., President, Montreal.

Victor Roy, 2nd Vice-President, Montreal.

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M. Perrault, Montreal.

A. F. Dunlop, R.C.A., Montreal.

Alph. Raza, Montreal.

ORIGINAL EXECUTIVE OFFICERS OF THE PROVINCE OF QUEBEC ASSOCIATION OF ARCHITECTS.

color of the stone varies from a blue to a deep gray; that of Chambord specially unites many qualities of a good free stone.

In concluding this report, we would suggest to the Province of Quebec Association of Architects the formation of a collection of stones not only from Lake St. John region, but also from the quarries of the Maritime Provinces and the Dominion in general.

Signed.

CHS. BAILLARGE.
F. H. BERLINGUET.
D. OUELLET.

ST. GEORGE'S PATENT VITRIFIED TILE SECTIONAL SEWER.

THE following particulars relate to inventions of Mr. St. George, City Surveyor of Montreal, to be used on the construction of sewers; and for which patents have recently been granted in the United States and Canada:

The invention has for its object to produce a sewer which shall be more

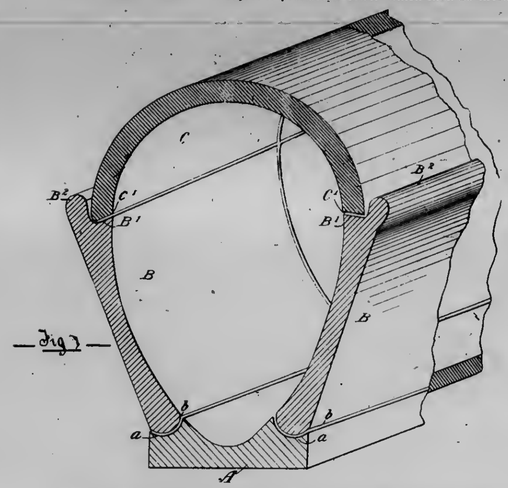


Fig 1

easily constructed and more durable than those now built up in brickwork, and have its constituent parts more easily handled and set in place than lengths of complete cross sections of such conduits, and be strongest at the points at which most resistance must be offered to the pressure of the earth.

The sewer is composed of oval cross sections of four pieces, viz., the invert, the two curved sides and the top—all these breaking joint at their longitudinal junctions. The invert is flat at the bottom, and has the skew-backs formed by its upper edges hollowed for the reception of the curved edges of the sections forming the sides, which at their junction with the invert are given such increased strength and thickness as will prevent the pressure of the earth from breaking them in. These sides have their top edges slightly sloping outward, and affording with a flange formed on each side section and projecting outward and above them, a continuous socket joint to receive the top arch, the edges of which correspond to the tops of the side sections, thereby protecting the branch or springing of the arch, *i. e.*, the point at which it is weakest, and especially so against external pressure. When any connection is to be made, such as a house drain with the sewer, one of the side sections (having formed in it an opening, which will serve either for a right or left junction, and a rim formed round it by the thickening of the substance of which the sewer is composed), may be substituted for a side piece of the ordinary type.

The vitrified tile will be from 2 to 2½ inches thick, and will cost about from $4.50 to $5 per lineal yard.

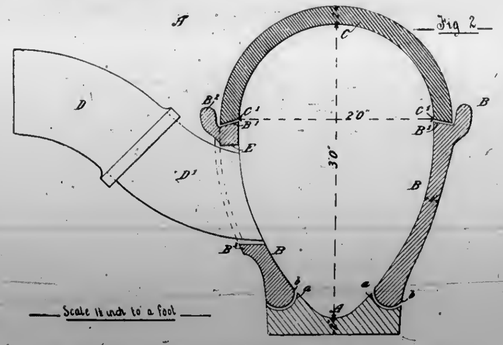
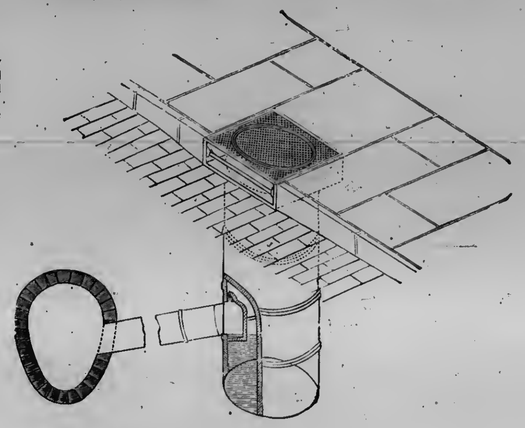


Fig 2

St. George's patent cast iron street gulley is made of cast iron, circular in form, twenty-four inches in diameter and upwards, the bottom section having a flat bottom, eighteen inches deep. Upon this is another section flanged with the sewer connectinn cast in it, also the same depth, and upon this another section of the same depth flat at the top to receive the open monthed gulley, which is made from any depth from nine inches upwards to suit the depth of the watercourse, forming a part of the sidewalk. A manhole cover is formed in it, which is keyed to prevent its being tampered with. Through this manhole cover men can descend to clean out the cess-pit, or it can be cleaned by means of scoops. The whole gulley is four feet six inches deep from the watercourse level to the bottom of the cess-pit. The advantages over a brick gulley are that the material is imperishable and is easily built and handled.



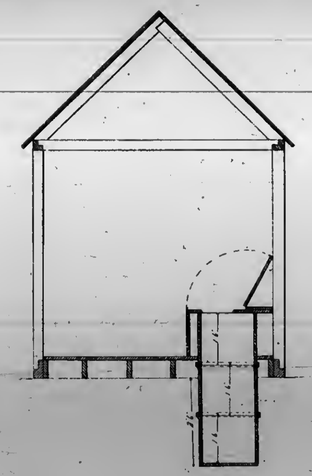
The following tables of comparative cost will be of interest:

Portland cement, 2 bbls., at $3.00	$6.00
Labor, 7 days, at $1.25	8.75
Carter, 2 days, at $2.00	4.00
Bricklayer, 2 days, at $3.50	7.00
Bricks, bevelled, 750, at $11.00 per 1,000	8.62
Bricks, squares, 250, at $10.00 per 1,000	2.50
Sand, 1 cartload	75
Bottom stone for foundation, 20 ft. at 2 › cents	4.00
Grate stone	3.60
Iron grating	7.00
Cast iron Shedd's trap	1.50
Total cost	$53.72

Cast iron pipe in sections, 1,100 lbs., at 2 cents per lb.	$22.00
Labor, in setting and digging, 6 days at $1.25	7.50
Carter, 1 day, at $2.00	2.00
Cast iron Shedd's trap	1.50
Royalty	5.00
Total cost	$38.00

Or a difference in cost of say $14.00 in favor of the iron gulley. It is presumed that the cast iron will last for at least twenty years as against the four or five years service of the brick, added to which is its improved appearance and the fact of its being perfectly watertight.

The following cities have them in use: Montreal, Quebec, Toronto, Ottawa, St. Henry, St. Cunegonde, Cote St. Louis, Cote St. Antoine, Owen Sound, Peterboro'.



This gulley can also be used for cess-pools, as shown in cut.

QUERIES AND ANSWERS.

DEC. 6, 1890.

Editor CANADIAN ARCHITECT AND BUILDER.

SIR,—Will you allow me to ask you a question about house planning? The November issue of your journal contains a view with plan attached of a villa at St. Hyacinthe, P.Q. Do you think it is a good thing to have a toilet room with a water closet and bath in it placed in the centre of the house, opening only out of the reception room—apparently one of the best rooms in the house. The architects do not show how this closet and bath are to be lighted or ventilated. It can hardly be from the roof, as the roof over it is the highest part of the building. There is a borrowed light from the kitchen, but I should think it was not advisable to ventilate a water closet only into a kitchen.

One other point strikes me. The bath is so enclosed behind the w. c. partition that a bather can get in only at one-half of the bath, and this bathroom is lighted by a borrowed light into the reception room. There are many students who would like to know more about this plan than is shown here. Perhaps the architects would give us some particulars?

Yours, etc., "JUNIOR."

TORONTO ARCHITECTURAL SKETCH CLUB.

A WELL-ATTENDED meeting of this club took place on Tuesday evening, Nov. 25th, when an instructive paper on "Mouldings" was read by Mr. R. W. Gambier-Bousfield, A.R.I.B.A. To make his paper more consistent, Mr. Bousfield had prepared a number of diagrams showing the formation and tracing the development of mouldings in the various styles. At the close of the paper a hearty vote of thanks was tendered the lecturer for the amount of time and labor he had given the subject.

Mr. Frank Darling then criticized the competitive drawings for "A Cottage by the Sea," pointing out the merits and defects of each design in such a way that many useful points were obtained by those present. He thinks that a verandah, instead of running narrowly round the greater part of a building, should be of less length and wider; it would then give more room for persons to sit in groups without impeding traffic, would be useful for open air meals, and in every way more suitable for a summer cottage. The desirability of keeping the kitchen as separate as possible from the main building was emphasized, also the need of having some access to the kitchen otherwise than through dining-room. This is one of the most successful competitions the club has had, twenty very creditable designs being sent in. The authors of the three best designs are as follows: First place, T. R. Johnson; second, Ernest Wilby; third, Chas. Lennox. A noticeable feature in the competition was a design sent in by an amateur member of the Club.

The subject of the next competition is "A Window in Some Distinctive Style"; size of openings 9 ft. × 12 ft.; drawings to be sent in by Jan. 24, 1891.

On Tuesday, the 9th inst., the Club met at the Public Library, and by the courtesy of Mr. Bain, examined the architectural and other art books contained in the reference department.

The reading class, conducted by Mr. S. G. Curry, which meets every Monday evening, has started with a very good attendance. Clark's Building Superintendence is the first book taken up, and it is proposed to work conjointly therewith on D. C. Berg's "Safe Building."

PUBLICATIONS.

Canada's illustrated paper, the Dominion Illustrated, is greatly improved under its new management. The Christmas Number, kindly sent us by the publishers, is of a high character in point of letterpress and illustration, and as a purely Canadian production, does credit to the country as well as to the enterprise of the publishers.

The Christmas edition of the Cosmopolitan Magazine is one hundred thousand copies. The order, as originally given to the printers, was for 85,000 copies, but while on the press it was thought advisable to increase the number to 100,000. It contains a feature never attempted before by any magazine, consisting of 123 cartoons from the brush of Dan Beard, the now famous artist, who did such wonderful illustrations in Mark Twain's book, "The Yankee at the Court of King Arthur."

To Mr. James Acton, the publisher of the Canadian Shoe and Leather Journal, is due the credit of having produced the largest and handsomest special number of a trade journal ever published in Canada. In addition to upwards of 200 pages of letter press and engravings of the principal Canadian cities, leading leather manufactories, wholesale and retail shoe stores, etc., it contains more than one hundred portraits of representative men in the trade throughout Canada. The typography throughout, as well as the many-colored lithographed covers in which it is enclosed, is of a high order. The extensive advertising patronage bestowed upon this number speaks well for the enterprise of the Canadian shoe and leather trades, who evidently have discovered that in judicious advertising is to be found one of the most important secrets of business success.

Mr. Jos. R. Kilburn, architect, Stratford, Ont., a member of the Ontario Association of Architects, died on December 7th of pleurisy after two days' illness.

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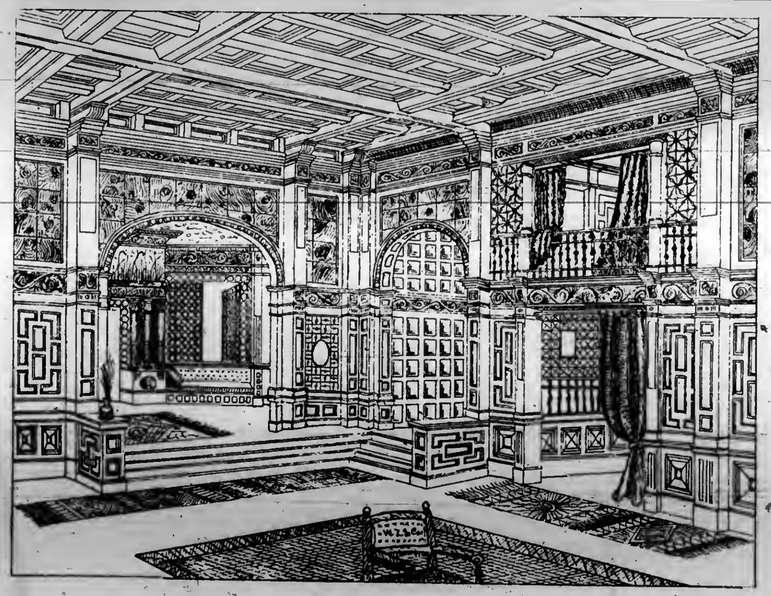

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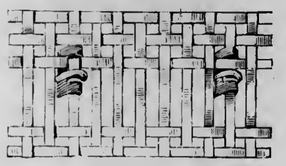

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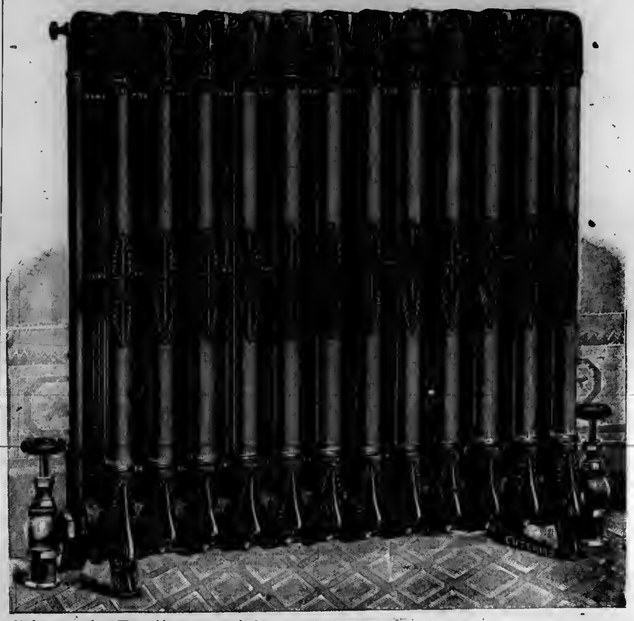

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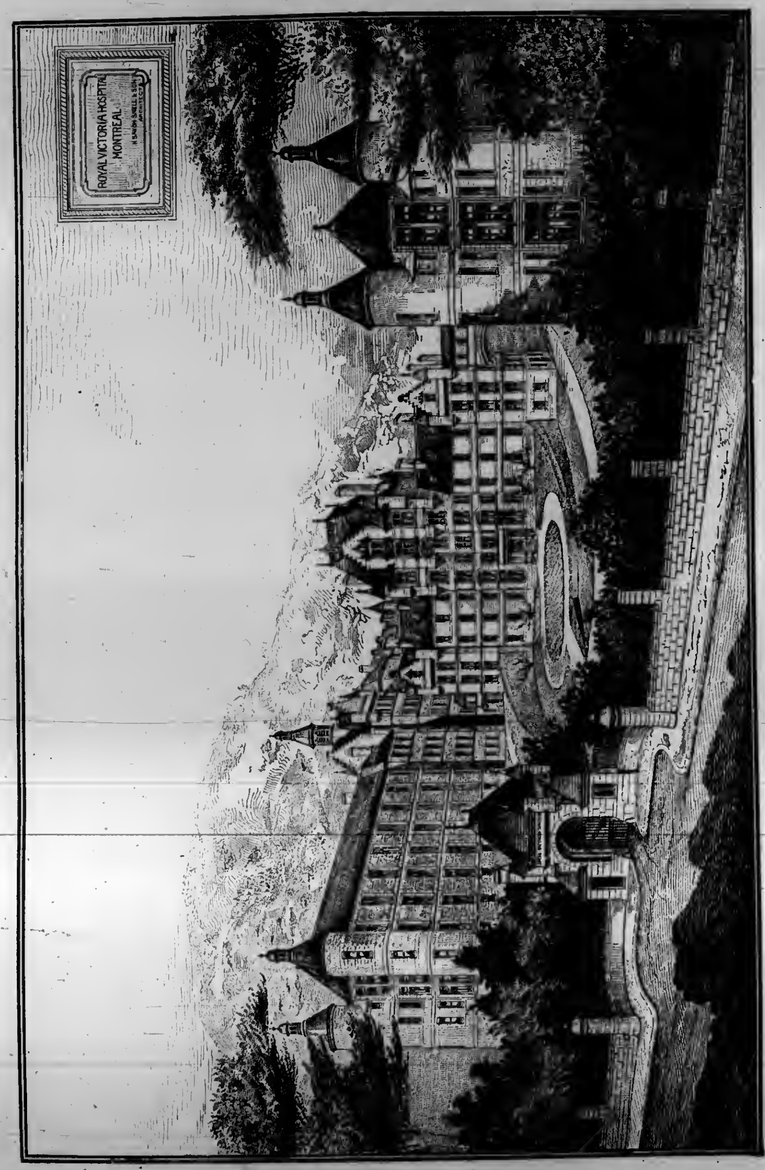

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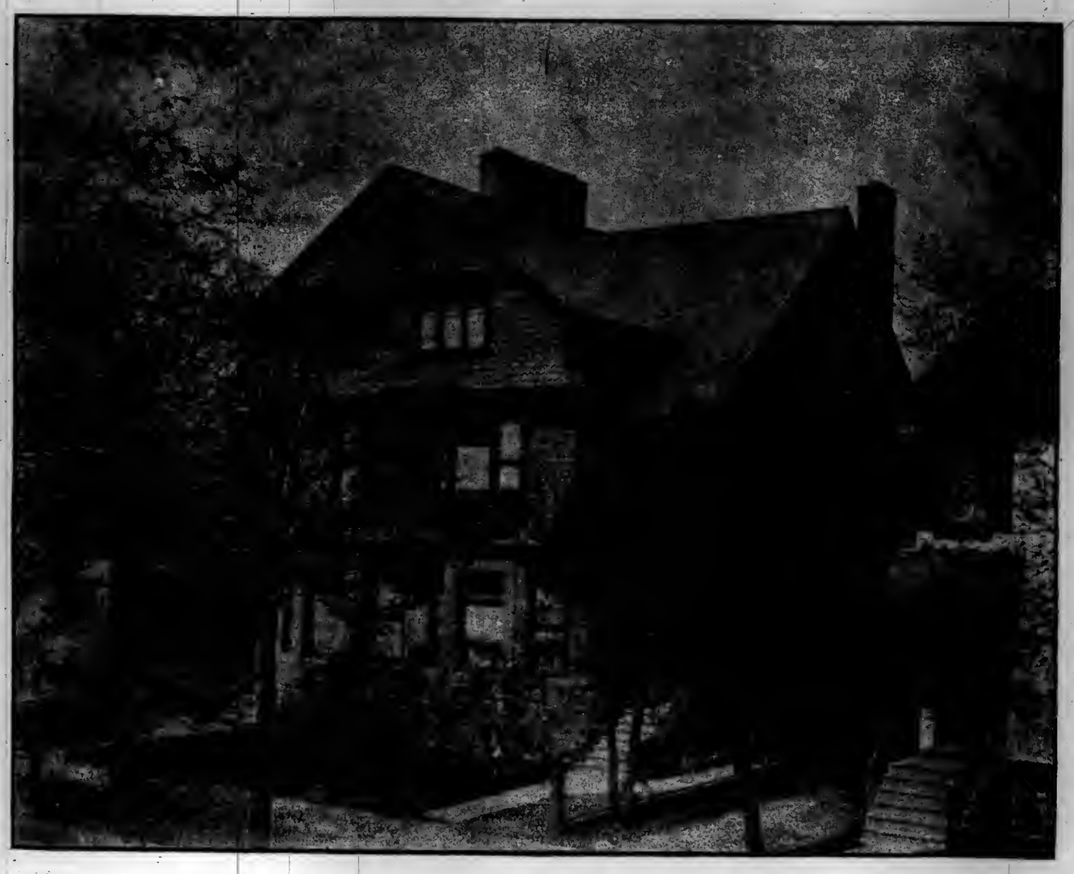

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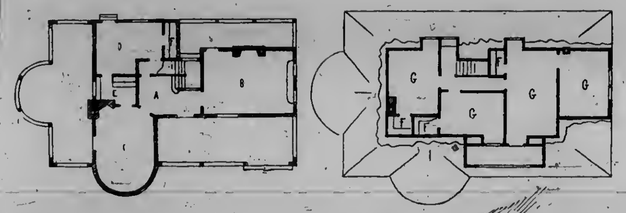

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C. Dining Room
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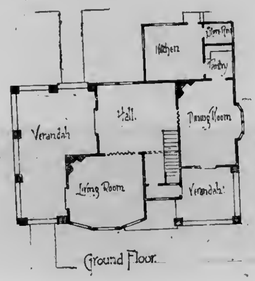
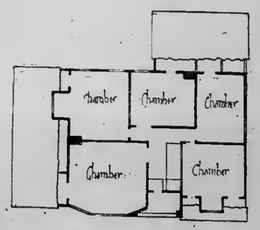


Ground Floor.



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VOL. IV.

1891:
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NOTE.—It has been discovered in preparing this Index, that by an error in printing, the paging of the November number is identical with that of October. To overcome the confusion to which this unfortunate occurrence must have given rise, the pages in the October number have been marked "A." and those in the November number, "B."

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SUBSCRIPTIONS.

The CANADIAN ARCHITECT AND BUILDER will be mailed to any address in Canada or the United States for $2.00 per year. The price to subscribers in foreign countries, is $2.50. Subscriptions are payable in advance. The paper will be discontinued at expiration of term paid for, if so stipulated by the subscriber; but where no such understanding exists, it will be continued until instructions to discontinue are received and all arrearages paid.

ADVERTISEMENTS.

Prices for advertising sent promptly on application. Orders for advertising should reach the office of publication not later than the 12th day of the month, and changes of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The "Canadian Architect and Builder" is the official paper of the Architectural Associations of Ontario and Quebec.

The publisher desires to ensure the regular and prompt delivery of this Journal to every subscriber, and requests that any cause of complaint in this particular be reported at once to the office of publication. Subscribers who may change their address should also give prompt notice of same, and in doing so, should give both the old and new address.

WE observe by the daily papers that the Building Committee of the University of Toronto has adopted plans for the new Library building. But we are sorry to notice that from motives of economy, so called, they instructed the architect to cut $10,000 off the estimated cost by designing plainer elevations. As the site is to be quite as prominent as that of the main building, being the east side of the Campus, it will be a serious mistake to so mutilate the design as to make the building in any marked degree inferior to the main structure. If there has been any advance in architecture since the days of the first building, surely here is an opportunity of exhibiting it. If the committee pursues a cheese-paring policy in this respect, they will call down upon themselves the execrations of lovers of art in architecture for generations to come.

IT is yet too early to speak with any degree of certainty concerning the building outlook for 1891. It is, however, worthy of note, that the approaching spring is being looked forwartl to with a hopeful feeling. Anticipations of a fairly active season are based on the belief that many of the building enterprises designed to be undertaken last year, but which were withdrawn owing to the strike, will be carried out the present year. The falling off in architects' incomes last year, in some instances to the extent of thirty and forty per cent., is conclusive evidence of the effect of the strike in diminishing the volume of business for the season. The belief that much of the work thus prevented from being done in 1890 will go forward in 1891 seems to be a reasonable one. The prospects for the coming season, therefore, so far as they are discernible at this distance, appear to be of an encouraging character.

ONE of our esteemed American contemporaries observes that "one of the exponents of mind in this age, as manifest in its current architecture, is shown by a grasping after effects that come by the power of mere size, or the prodigious." The new Parliament buildings now being erected in Queen's Park, Toronto, will alone suffice to illustrate the truth of the above idea. Covering, as they do, several acres of ground, and being planned on an enormous scale, it would be impossible for them not to be conspicuous, but they are altogether wanting in those features of artistic interest which, when embodied in the designs of public buildings, are a perpetual source of pleasure to the refined, and an educative influence on the masses. The President of the Toronto Art Students' League, in a paper on "Art Education in Canada," published on another page, laments the common-place character of the carving, which is intended to ornament the exterior of this structure. It should be borne in mind, however, that the use of ornament of a higher order would obviously be incongruous with the design from which the buildings are being constructed.

A YOUNG correspondent makes use of our columns to express, in a good-natured way, his opinion that the first annual dinner of the Toronto Architectural Sketch Club would have been more enjoyable had certain features of the proceedings to which he refers been omitted. We sympathize, to a certain extent, with this opinion. The students and their interests might properly have received a larger share of attention from the speakers. In fact some of the speech-making might well have been laid on the shoulders of the younger members of the Club, an expression of whose opinions would have been valuable as indicating what is likely to be the standard of practice of the succeeding generation of architects. It would be too much to expect perfection to mark the first undertaking of this kind. On the whole the Club deserves to be heartily congratulated on the pleasure and profit which marked the occasion, the annual recurrence of which will be looked forward to with pleasant anticipation. Such re-unions serve to bring together representatives of kindred interests, and to strengthen individual aspiration and the national spirit.

THE proposal to secure additional park accommodation from the University authorities is strongly opposed by many of the citizens of Toronto who think, not only that the exchange for the Front Street property will not be in the interest of the city from a financial point of view, but that we need a number of smaller parks and recreation grounds, rather than an increase of the size of Queen's Park, which is already sufficient for the needs of as many as can conveniently reach it. What we urgently need is a system or series of public play grounds, so located that the children of any locality may reach one in say five minutes from their respective homes. In connection with this may be mentioned the suggestion of the Public Places Association, of which Mr. O. A. Howland is President, viz., the possibility of securing the present Upper Canada College site. There would be space at its west end for a magnificent playground, while the east end is already a park with well-grown trees. The buildings could well be utilized for museum and art purposes. The city has at present no proper accommodation for art schools. Here is a place ready at hand, and which would suffice for years. After a time it might be possible to erect buildings worthy of the city, and which would properly house our art, historical, musical and scientific societies.

THE Bill to incorporate the Province of Quebec Association of Architects has passed the Legislature, but like its predecessor in Ontario, is but a skeleton of its original form. The members of the Quebec Association have secured only the right to call themselves "Registered Architects," with a legal tariff, etc. A copy of the measure has reached us, but too late to allow of its being printed in the present number.

INQUISITIVENESS is a good thing if exercised within proper limits. Unfortunately it has in some degree come to be regarded as a characteristic worthy only of reprobation, because of its abnormal development in certain individuals. This may or may not be accountable for the fact that so little use is made of the columns of the CANADIAN ARCHITECT AND BUILDER by subscribers and readers for the purpose of making enquiries regarding matters with which they desire to become more familiar. Few indeed there are so thoroughly posted as not to be in need of information on some subject appertaining to the profession or calling in which they are engaged. It may reasonably be assumed that architects and builders are no exception to this rule. Asking questions is one of the speediest methods of obtaining knowledge on any subject. We should be pleased therefore to receive and publish questions from our readers relating to methods of construction and kindred subjects coming legitimately within the scope of this journal. Without laying claim to the possession of any extraordinary degree of knowledge we nevertheless promise to exhaust all the sources of information at command in an endeavor to satisfy any demands for information which may be made upon us as the result of extending this invitation. The reward for any efforts put forth with this object would come to us in the interest and value to our readers which would attach to the publication of questions and answers of this character. Now bring on your questions!

THE directors of the Columbian Exposition at Chicago have set an example of wisdom in the manner in which they have gone about the solution of the architectural portion of that gigantic undertaking. It will be remembered that Messrs. Burnham & Root were appointed consulting architects, with Olmstead & Co. consulting landscape architects, and Mr. Gottlieb consulting engineer. These gentlemen submitted a report to the directorate, in which they reviewed the advantages and disadvantages of various methods of securing designs for the various buildings. They submitted four propositions: 1st, The selection of one man to whom the whole of the designing and supervision should be intrusted; 2nd, open competition; 3rd, selected competition; 4th, direct selection—say five men of reputation. The directors, on the recommendation of the consulting architects, adopted the last proposition. The *Inland Architect* says of the report: "As a professional document the report stands higher than any expression upon ethics or practice ever issued to the profession or the public in this country. It establishes a precedent that will more strongly influence the manner in which public as well as private work will be done, than any other measure, less than a Congressional or State enactment. It will aid in destroying the court house competition evil. It is a document that in effect will advance professional practice many years, and as such its authors deserve the thanks of all architectural practitioners, and the country as well, in the improvement in public and private works that will result from the example set of selecting the best talent rather than procuring designs by more or less disreputable competitions."

ANY person who has stood at the intersection of King and Yonge streets, Toronto, during the busy hours of the day, or in fact at any time between the hours of 9 a.m. and 6.30 p.m. cannot have failed to be impressed with its congested condition. At this point is converged the bulk of the street railway traffic of the city (every line but two, we believe), and the frequent passing and crossing of the cars alone is sufficient at times to seriously delay both pedestrians and vehicles as well as the passengers in the cars. An army of operatives, clerks and business people, re-inforced by shoppers and visitors, jostle each other and dive over the crossings, often at great risk of life and limb. This blockade keeps on increasing, and the limit will soon be reached, making necessary the adoption of some means of relief. It will not do to divert the street car traffic. It is of the utmost importance that a car may be taken from such centre a to any part of the city. Pedestrians will not make use of overhead bridges, preferring to dodge through on the level rather than climb stairs. The best solution that suggests itself to us is the widening of Yonge street at this point. The buildings on the northwest and northeast corners as far as the first lane on the east side are mostly old and comparatively inexpensive. By expropriating the sites on which they stand the street could be quite doubled in width for a distance northward of about 120 feet, making a sort of square which would not only greatly relieve the traffic, but would give dignity to the most important corner in the city. The improvements could never be accomplished cheaper than now, and we respectfully call the attention of the city fathers and the public to its necessity and utility.

A VERY interesting and profitable discussion might be carried on through our correspondence columns upon the relative merits of the two systems of preparation of architectural students referred to by Mr. Waterhouse in the presidential address noticed elsewhere in these columns, viz., that of first entering the office of a practitioner, studying at the same time as best may be the theoretical subjects set for his intermediate examinations; or that of passing the earlier years at a technical college and finally entering an office for the practical portion of his education. It is claimed in favor of the latter system that the student is enabled, when he enters an office after a thorough technical training and a well disciplined mind, to devote his attention almost wholly to the acquisition of practical knowledge and experience, and thus to really shorten the period necessary to become a competent member of the profession. If the profession is to draw well prepared students from our own institution, it will be necessary to enlarge its scope very materially. The work now being done is good, so far as it goes, but no architect of standing would care to be limited to recruits turned out from it under present circumstances. The Government will have to awake to the necessity of putting the architectural section on a par with similar institutions on this continent. To do this the very best men obtainable should and must be installed, and these cannot be got without adequate remuneration. No architect of experience who can make even in Canada an income of from three to six thousand dollars would be willing to give up business and accept the pittance which would be his lot were he to consent to occupy a chair in our institution.

THE question of patenting plans has given rise to considerable discussion and correspondence in the English architectural journals. A firm of architects have developed, or matured, what they claim to be an original arrangement of public offices, suitable for municipal or corporation purposes, and which they exhibit in its completeness in their competition designs for the new municipal buildings in Sheffield, (illustrated in *Building News*, July 25th, 1890). This particular idea they seek to patent intending to claim a royalty from any person who hereafter may adopt the same arrangement. This arrangement is, in brief, a general office, or series of them if for a large municipality, opening from a central hall. An official corridor surrounds three sides of the general office, from which only, it has access. The official corridor gives access to the various private rooms of the departmental officers, and they are thus removed from the intrusion and disturbance to which they would be subjected if their apartments opened from the public hall. Numerous correspondents protested against the proposal to patent this arrangement, citing instances of planning so nearly similar as to, in their opinion, nullify the claims of the would-be patentees. The Toronto court-house plans embody the idea, but on a very limited scale, the three court-rooms and the judges and prisoners' rooms being connected by a private corridor. The general consensus of opinion amongst the members of the profession seems to be strongly against the proposed action of this firm, claiming that were others to follow in their footsteps, all freedom in planning would be shut out, and that architects would be continually tormented by fears of trespassing on forbidden ground. At the same time it is most exasperating to an architect to see his pet ideas or designs, which have cost many hours of thought and toil, coolly cribbed by some speculative builder or enterprising architectural aspirant. We heard of a case of composite architecture, not many months ago, and not

fifty miles from Toronto. A young business man wanted to build a stable. He said, "I could not understand house architecture—that beat me, but I knew all about stables and horses, so I laid out the floor plans myself; got a young fellow in an architect's office, who lived handy, took him around to all the stables—that door, I got on ——— street, that gable on another, and those windows on another; then I had him around to the house every night, and we got up the prettiest stable in the city."

ARCHITECTURAL EDUCATION IN ENGLAND.

THE address of the President of the R. I. B. A. at the opening meeting of the fifty-seventh session, was a most interesting dissertation on subjects of vital importance to the profession, and coming from such an acknowledged master, should be received with marked attention by architects in all lands. The following remarks of Mr. Waterhouse are of interest in the light of the steps now being taken by the Ontario Association in the matter of students' examinations. He said, "Since the commencement of last session the new system of progressive examinations has come into operation. Two preliminary examinations for candidates, qualifying as "probationers," have been held in various centres, 169 students presenting themselves; of these, 62 have been declared exempt, and 77 have passed the examination, making a total of 139 who are qualified, in due time, to come up for the intermediate examination, which will be held for the first time this month. In addition 54 gentlemen have passed the qualifying examination in Architecture, entitling them to become candidates for Associateship. If a man is to take a creditabls position as an architect in the future, he must begin by passing these examinations. It seems to me as essential, at the present day, to have passed them as it was in former years to have spent a certain period in an architect's office as a pupil. I do not say that both courses are not desirable, even necessary; but it will soon be found that the passing of these examinations is a *sine qua non*."

Mr. Waterhouse's reply to a suppositional question as to how the early days of one who intends to study architecture as a calling should be spent to the best advantage was as follows, and we cannot do it justice without quoting in full:

"He should have received in his schooldays some preliminary training of a scientific as well as of an artistic character. He should learn early to understand and appreciate the beauties of a fine building—of the civic and domestic edifices, the grand cathedrals and churches, the noble streets and open spaces, with which many a city in this country is endowed. He should be taken to museums of "comparative sculpture" such as the initiative of Violet-le-Duc created in the Trocadero, and, in default of similarly arranged educational institutions at home, to the sculpture galleries of the British and South Kensington Museums. In fine, he should, in his early, pliable days, be shown the works—or casts or drawings of the works—of the great architects of various countries, and thereby acquire an insight into the magnitude, the nobility of the career upon which he is about to enter. At the same time, his ordinary education should not be neglected. He must pass the matriculation examination of a university, or the local examination conducted under the authority of a university, or he must obtain some testimonials of proficiency granted by well-known educational bodies. Then, armed with such letters of introduction, he should come to the Royal Institute of British Architects, where he will be cordially received; and thereupon, after the necessary inquiries as to his certificates and after examination of his powers of draughtmanship, he will be admitted a probationer. His next proceeding is to be articled, say for three years, to some practising architect on the conditions suggested in the form of articles which has recently been published, a most important item of which states that 'with the object of enabling the pupil to qualify himself for passing the examinations of students and Associateship of the Royal Institute of British Architects, he, the principal, shall and will allow the pupil such absence as he, the principal, shall deem reasonable for the purpose of attending lectures, classes of instruction, and the said examinations.' During the term of his articles the pupil, or rather the probationer to whom I am alluding, will have to prepare the "testimonies of study," which he has to submit to the Board of Examiners before he can be admitted to the intermediate examination; and to assist him in the preparation of these "testimonies" in London he will, if properly advised, become a member of the Architectural Association, attend its classes, periodical visits to buildings, etc., and thus mix with others engaged in a similar course of study. During all this period the Reference Library of the Institute is open to him, and he can borrow books not only from the Lending Library of the Association, but also from that of the Institute. At the end of his articles he passes the intermediate examination, is qualified as a student of the Royal Institute of British Architects, and his name and address are inserted in the register of members of the Institute, and published in our Kalendar. He afterwards competes for the prizes offered by the Association, and then for those offered by the Institute. He gains a prize, perhaps a studentship, which enables him to travel in France or Italy, or even as far as Greece. He returns to England, enters an office as assistant, prepares his probationary work for the final examination to qualify for candidature as Associate; he passes the examination and is registered Associate. I confess that this record of the younger days of an architectural student seems to me a fairly complete one. No President of this Institute, forty or even twenty years ago, could have told a similar tale. Possibly, in a not distant future, we may find it better to use a course of instruction somewhat analagous, let us say, to that pursued by Professor Ware in New York, as a preparation for entering an architect's office, than that theoretical instruction of the sort just indicated should go on *pari passu* with pupilage. For a pupil to reap the full benefit of his time in an office, he should as soon as possible find himself set to practical work, and work of this sort in a busy age can hardly wait for one who spends a considerable portion of his time in abstract study; indeed, this term of pupilage might be greatly shortened were it to follow rather than be contemporaneous with theoretic training."

"CANADIAN ARCHITECT AND BUILDER" COMPETITION FOR A CITY HOUSE.

THE publisher of the CANADIAN ARCHITECT AND BUILDER invites competitive designs for a city house to cost not more than $4,000.

The house is to be erected by a young architect having an income of about $2,500 per annum and a family of three young children.

The house is to be placed on the south side of the street. The lot is 30 feet wide and the houses on either side are built up to within 2½ feet of the dividing line. They are at a uniform distance of 15 feet from the street line, and 55 feet deep including wing, and of the same class as the one in competition.

In judging the designs the disposition of the various rooms with regard to convenience and especially direct sunlight will be taken into consideration. Good planning will receive higher marks than good elevations, *i.e.*, a good plan having poor elevations, compared with a good elevation set up from a poor plan.

The city by-laws will not permit of wooden construction below level of first floor, while above that it must be either plastered or tiled.

The heating will be by hot air and position of registers should be indicated.

Each competitor will be required to give a concise description of his design, stating the materials he proposes should be used in its construction.

The first premium will be $15; second $5; third one year's subscription to CANADIAN ARCHITECT AND BUILDER. A premium of $5 will also be given for the best perspective sent in.

Drawings must be made on sheets of heavy white paper or bristol board 14 x 20 inches in size, and must be drawn sufficiently coarse to allow of their being reduced to one-half the above size. Drawings must be made in *firm, strong lines*, with pen and *black* ink. No color or brush work will be allowed. Each drawing must be marked with the *nom de plume* of its author, and the author's name, *nom de plume* and full address, enclosed in sealed envelope, must accompany each drawing sent in.

Drawings must reach the office of the CANADIAN ARCHITECT AND BUILDER, 14 King street west, Toronto, not later than the 5th day of February next.

The right is reserved of publishing any design sent in. All designs will be returned to their authors within a reasonable time after the competition is decided.

The decision as to the respective merits of the designs submitted will be made by a committee appointed by the Architectural Guild of Toronto.

All architects practising in cities are debarred from this competition.

PUBLICATIONS.

The most beautiful frontispiece ever produced in an American magazine, appears in the January number of the *Cosmopolitan*. It is a reproduction in colors of Francois Flameng's famous picture "The Cake Seller," and can scarcely be distinguished from the imported photogravure which is exhibited in the dealers windows, at the price of $7 a copy. It is one of the most charming of subjects, and is well worth framing and preservation. The *Cosmopolitan* has become noted of late for its frontispieces and this very much excels its previous efforts.

PRESENTATION.

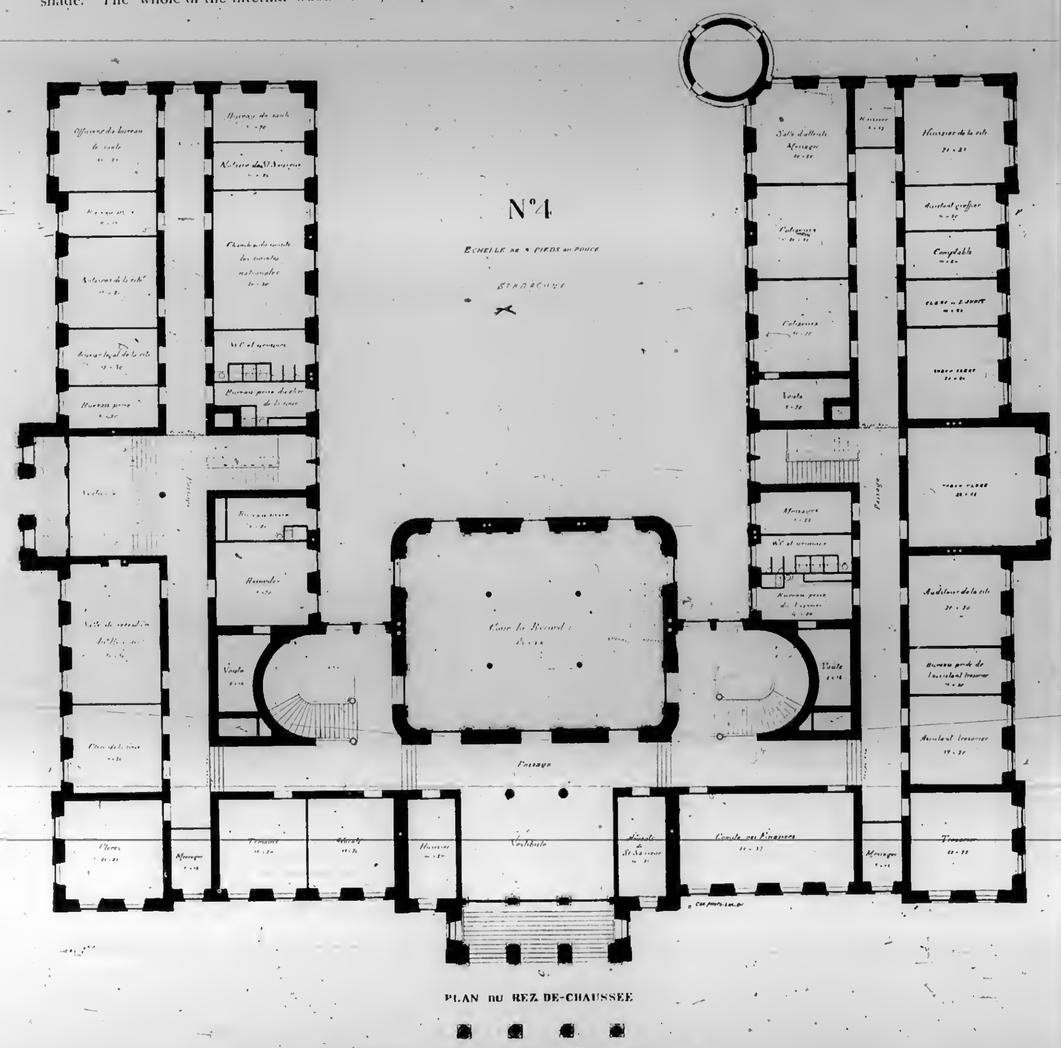
THE annual meeting of the Architectural Guild of Toronto was held in connection with the usual monthly dinner at Webb's on Thursday last. Mr. S. Frank Wickson was elected Secretary, and Messrs. Langton and Townsend, Executive Committee.

After the election of officers a very pleasing event occurred in the presentation to the retiring Secretary, Mr. S. G. Curry, of a beautiful repeating clock and an ivory rule, both suitably inscribed. The presentation was made by Mr. Storm, who referred in terms of warmest praise to the work of Mr. Curry in the organization of the Guild, and his indefatigable efforts in its interests for over three years since its inception. Mr. Curry replied, thanking the Guild in feeling terms, referring to the progress that had been made in architectural societies and organizations, and in the observance of professional ethics during the comparatively short period of the existence of the Guild.

OUR ILLUSTRATIONS.

HOUSE FOR MR. WM. GOULDING, ST. GEORGE STREET, TORONTO. —MESSRS. GORDON & HELLIWELL, ARCHITECTS.

Credit Valley brown stone with rock face has been used for foundation and all stone trimmings above ground line. The external walls from the stone work up are faced with brick of a mottled purple brown color, the joints being of a dark chocolate tint. The gables are filled in with terra cotta tiling, and all roofs are covered with blue slate with the exception of the entrance porch which is roofed with glazed Spanish tile, of a dark brown shade. The whole of the internal wood finish, except in base-



FIRST PREMIATED DESIGN QUEBEC CITY HALL COMPETITION.

ment and attic, is of black ash. The ceilings of main halls and dining room are divided into panels by heavy moulded wood beams and cornices, and the principle rooms on both ground and first floor have been elaborately decorated.

RESIDENCE AT MIMICO FOR W. H. ADAMSON, ESQ.—GIBSON & SIMPSON, ARCHITECTS, TORONTO.

THE STAIRCASE HALL, RESIDENCE OF D. E. THOMSON, ESQ., Q. C., QUEEN'S PARK, TORONTO.—MESSRS. LANGLEY & BURKE, ARCHITECTS.

FIRST PREMIATED DESIGN, QUEBEC CITY HALL COMPETITION. —MR. E. CHAREST, ARCHITECT, QUEBEC.

THE RECENT SKETCH CLUB DINNER.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—I noticed your presence at the annual dinner of the Architectural Sketch Club. Perhaps you did not notice a small boy away down in the dim perspective. At any rate don't you think we (the boys) were a little bored by some of the speeches and some of the (poetry!!!)? and some of the (songs!!!)? Don't you think Mr. Jones should have been glazed and leaded up on account of his so-called "goaks"? Would'nt the chairman have taken a prize for the length and frequency of his speeches and "remarks"? We would so much have liked the representative of the Ontario Association, Mr. Townsend, to have said a little about the educational outlook. We enjoyed some of the songs and recitations, but not the imitation Cockney with his drinking song. When I got home my big brother vowed I had been smoking, but I convinced him to the contrary; but my clothes smelled of the vile weed for three days.

Now, Mr. Editor, I think the young fellows would like to have the next annual meeting not quite so "growed up," and with more of the young chaps on the programme.

I can't say more now as I am busy with the drawings for my first intermediate exam.

Yours respectfully, VIGNOLE.

TORONTO ARCHITECTURAL SKETCH CLUB.

ON Tuesday, December 23rd, a paper on "Plastering," was read before the club by Mr. J. M. Gander, which lead to an interesting discussion on limes and cements at the close, nearly all present taking part. A synopsis of the paper will be found on another page. Before Mr. Gander commenced, the members examined, with interest, a collection of architectural photographs belonging to Mr. S. G. Curry, which he had kindly brought to the Club for that purpose.

The attendance at this meeting was not quite so large as usual, but this was no doubt due to the nearness of the Christmas holidays.

At the meeting held on January 13th, Mr. Joseph Yorke gave a very instructive lecture entitled "Stone: its Qualities and Uses," which he illustrated by samples of the various building stones used in Toronto, and the tools for working them, thus bringing the subject very clearly before his audience. Mr. Yorke received an enthusiastic vote of thanks for his trouble. In introducing the lecturer the Chairman, Mr. A. H. Gregg, made some very pertinent remarks on the subject from the æsthetic point of view.

Mr. T. R. Johnson was elected a member of the Executive Committee to take the place of Mr. A. R. Mead, who is away from the city.

At the next meeting, on Tuesday, 27th inst., a paper on "Building Materials," will be given by Mr. H. B. Gordon, which promises to be very interesting. The competitive drawings for a window will also be on exhibition, and criticised by Mr. Frank Darling.

THE POINTED OR ENGLISH STYLE OF ARCHITECTURE.

By "H. B."

THE pointed style of architecture is a graceful subject of investigation. Its importance with the architect is so great and obvious that it would scarcely be necessary to advert to it if we did not perceive the neglect with which it is treated, or the mistaken view with which it is contemplated, through the medium of those incongruous fabrics which are too often raised in modern days and are nominally attributed by their builders to this style.

Notwithstanding the virulence and declamation of those who were engaged in reviving Grecian architecture, the pointed mode remains the great boast of English art. Its origin may be disputed; the powerful rivalry of a neighboring country may not be denied; but no cavils of fastidious writers have succeeded in showing the prototype of our great national instances of excellence in this style. This mode of architecture was undoubtedly the pride of our ancestry—the favorite child of art on which they lavished indulgence—and the structures erected in this style are equally the pride of the existing period; since in the assemblage of their several perfections they present the single surprising instance in which the middle ages were enabled to produce an excellence in the ornamental arts, independent of all imitation, of the sublime simplicity of Greece and Rome.

The term Gothic was first bestowed on some species of ecclesiastical architecture, as an epithet of obloquy, and was intended to signify its supposed barbarous deviation from the Grecian or Roman modes—not to imply its deviation from the Goths, who, in fact, possessed no national mode of architecture, and when in Italy, profited by Italian artists. It is much wished that the word Gothic should not be used in speaking of the architecture of England, from the thirteenth to the sixteenth century. The term tends to give false ideas on the subject, and originated with the Italian writers of the fourteenth and fifteenth centuries, who applied the expression of "La Maniera Gotica" in contempt to all the works of art of the middle ages.

From these writers it was borrowed by Sir Christopher Wren, the first English writer who has applied it to English architecture. There is very little doubt that the light and elegant style of building, whose characteristic feature is the high pointed arch struck from the centres, was invented in this country; it is certain that it was here brought to its highest state of perfection, and the testimonies of other countries, whose national traditions ascribe their most beautiful churches to English artists, adds great weight to this assertion, and peculiar propriety to the term English, now proposed to be substituted for the word Gothic.

"The architecture used by the Saxons is very properly called Saxon. The improvements introduced after the Norman conquest, justify the application of Norman to the edifices of that period. The nation assumed a new character about the time of Henry the II. The language, properly English, was then formed, and an architecture founded on the Norman and Saxon, but extremely different from both, was invented by English artists; it is surely equally just and proper to distinguish this style by the honorable appellation of 'English.'

In this they essentially differ from the Roman's way, who laid all their mouldings horizontally, which made the best perspective; the Gothic way on the contrary carried all their mouldings on the perpendicular; so that the ground work being settled, they had nothing else to do but to spire all up as they could. Thus they made their pillars into a bundle of toruses, which divided into more when they came to the roof; and then these toruses split into many small ones, and, traversing one another, gave occasion to the tracery work.

Sir Christopher Wren indicates that the practice of the pointed style of architecture, exclusively appertained to the fraternity of Free Masons, who were stimulated to exertion by the indulgences granted by the Pope, and styled themselves Free and Accepted Masons, and ranged from one nation to another as they found churches to build (for very many in those ages were in building, through piety or emulation). Every tenth man was called a warden and overlooked each nine. Sir James Hall, Bart., the ingenious antiquary, referring to those principles whence all the works of true genius take their data, observes that the combination of art with that of nature, of which we see the most perfect example in the Corinthian capital, produces what are called architectonic forms in which the variety of nature being subjected to the regularity of art, the work acquires that peculiar character, which in a natural object, or in its entire representation we consider offensive under the name of formality, but which, in architecture, we admire as a beauty, under the name of symmetery. Occupied with this point of the probable origin of the pointed style, in whatever district of the globe the invention might have occurred, he was accidentally induced to attribute it to an imitation of small simple buildings, composed of willow rods. He worked experimentally on his new idea and found that, from an artificial combination of such rods, united with the effect produced upon them by time and the course of nature, even the most intricate forms of this elaborate style might be reduced, in the view of a theorist, to the simplicity of their original state.

A casual thought, incidentally conceived, and expressed without a view to its consequences, but which tends towards the same speculation, occurs in the following words of Grose: "A number of boughs, stuck into the ground opposite to each other, and tied together at the top in order to form a bower, exactly describe the pointed arch." Searching in history for support of his theory, Sir James Hall notices several early religious buildings, which are expressly said to have been made of rods. Such was the first little church of Durham, and the celebrated old church of Gastonberg. Sir James Hall has sufficiently profited by his historical aid, in stating it as being likely that a pious posterity would endeavor to preserve the peculiar form of such churches, by representing them in stone; and this attempt when carried into execution, being found to produce a beautiful effect, it is not unreasonable to suppose that the idea should become a favorite one, being followed out by successful refinements, might give birth to a new style of architecture.

Mr. Hawkins contends that in every Gothic cathedral as yet known, the extent from north to south of the two transepts, including the width of the choir if divided into ten, as Vitruvius directs, would exactly give the distribution of the whole. Three arches form the north, and three the south transept; the other four give the breadth from one transept to the other, one division of the four being taken for each of the side aisles of the nave, and two left for its centre walk, the complete distribution of the nave is also given.

Whilst noticing the relative proportions of buildings in this style of architecture, it may be desirable to cite the following remark of Brown Willis, although unconnected with any presumed similitude of arrangement between the works of Grecian and ancient English architects: "In most of the stately abbeys, the height was equal to the breadth of the body and side-aisles. The steeple and towers were equal in height to the length of the whole fabric; or rather the cross aisle from north to south, as is the case in Bristol, Chester and St. Davids. The cross aisles often extended half the length of the whole fabric, as did the nave or western part, viz., from the great door at the west end to the lower great pillars that supported the steeple. And the side-aisles were just half the breadth and height of the nave, insomuch that both added together exactly answered it.

Mr. Warton divides the pointed style into three classes, which he thus denominates:—The Absolute Gothic, which began with ramified windows of an enlarged dimension, divided into several lights, and branches out at the top into a multiplicity of whimsical shapes and compartments, after the year 1300. Of this fashion he considers the body of Winchester Cathedral to afford a just idea; the Ornamental Gothic, of which he names for example the choir of St. Mary's Church at Warwick; the roof of the Divinity School at Oxford; and the Chapel of King's College, Cambridge; the Florid Gothic, of which the Chapel of St. George, at Windsor, and the Chapel of Henry the VII, at Westminster, are conspicuous specimens.

Mr. Britton, in the judicious "Sketch of a Nomenclature of Ancient Architecture," thus designates them to their respective dates, viz.: English, from 1189 to 1272, embracing the reigns of Richard I, John, and Henry III; Decorated English, from 1272 to 1461, including the reigns of Edward the I, II, and III, Richard the II, and Henry the IV, V, and VI; Highly Decorated or Florid English, from 1461 to 1509, including the reigns of Edward the IV and V, Richard the III, and Henry the VII. "From this era," observes Mr. Britton, "we lose sight of all style and congruity"; and public buildings erected during the reigns of Henry the VIII, Elizabeth and James the I, may be characterized by the term of Debased English or Anglo-Italian.

Dr. Milner describes them thus. The First Order, that of the acute arch, he considers to have been perfected before the end of the twelfth century, and to have continued till near the close of the thirteenth century. Example, interior of the east end of Canterbury Cathedral. The Second Order, he terms that of the perfect or equivalent arch, but adds for an example, the interior of York Minster. He states this order as prevailing from the disuse of the former till after the middle of the fifteenth century;

the Third Order, or that of the obtuse arch, obtained from the date at which the preceding was rejected, down to the sixteenth century, when the style itself was exploded; example, Chapel of Henry the VII.

Convinced that the terms applied by Mr. Britton are sufficiently appropriate and expressive, I have on the present occasion adopted his nomenclature. The arches used in this first class of English architecture were of narrow proportions, and sharply pointed. In large structures, where a second tier is introduced opening to the triforium, two or more arches are united under one, with trefoil or cinquefoil heads; and arches with the same kind of finishing sometimes occur in other parts of the building. The columns are slender, and are surrounded with detached shafts of marble united at the base; and each, according to Mr. Bentham, having a capital richly adorned with foliage, which together in a cluster form one elegant capital for the whole pillar. It may be added that the capitals thus uniting under one head were not invariably adorned with rich foliage, but were sometimes conspicuous for simplicity of decoration. The windows are of a narrow oblong form, and pointed like a lancet. They are sometimes seen in one opening, forming a single light, in which mode they often occur in the chancels of small parochial churches, and may be presumed to indicate the earliest stage of this architectural class. But in edifices on which great labor has been bestowed, we find two, or as frequently three united together; the central being higher than those placed laterally, as the prevailing window in many of the noblest structures of the Third Henry's reign, where two or more of the arches are placed together under one larger arch. The vacant space between the heads is filled with a trefoil, quatrefoil, or cinquefoil.

Ecclesiastical structures displaying the Early English style of architecture, reign of Richard the I, from 1189 to 1199:—North side of the west transept of Rochester Cathedral, Kent; the Chapel of the Holy Trinity at Canterbury, Kent, which has windows in the lancet shape, appears to have been completed about the commencement of this reign; upper transept of Lincoln Cathedral and Choir, Lincolnshire; part of the nave and aisles of Peterborough Cathedral, Northamptonshire. Reign of John, from 1199 to 1216: Vestibule at the entrance, termed "The Galilee," of Ely Cathedral, Cambridgeshire; parts of the east end of Winchester Cathedral, Hampshire; remains of Beaulieu Abbey, Hampshire; choir and upper transept of Rochester Cathedral, Kent; parts of the nave and central tower of Lincoln Cathedral. Reign of Henry the III, from 1216 to 1272:—Presbytery of Ely Cathedral, used as the choir, erected between the years 1235 and 1252, Cambridgeshire; Westminster Abbey Church, begun in 1245, completed as to the works of this reign, 1269; the tower and west front of Wells Cathedral, Somersetshire; Salisbury Cathedral, Wiltshire; this edifice is inestimable as an architectural specimen; the two upper divisions of the tower and the lofty spire have been added since; this Cathedral was begun in 1220, and finished, with the above exceptions, in 1258; the transept of Worcester Cathedral, Worcestershire; the south transept of York, Yorkshire, erected about 1228, and the north about 1260. It is believed that painted or stained glass for the use of church windows in England was introduced; or at least so frequently adopted as to constitute an era, about the time of Henry the III.

(To be Continued.)

ARCHITECTURE IN NEW YORK.

A BRIGHT young student of architecture who recently left Toronto to pursue his professional studies in New York City, has lately written to a member of the firm in whose office he was here his first impressions of the architecture of that city. We have been privileged to make extracts from this letter, which are here presented to our readers in the belief that they will be found interesting and perhaps instructive:

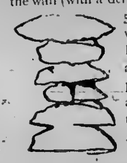
"I enjoyed myself strolling around several days after I got here, looking at the architecture. Several new buildings they have put up and are finishing here are very beautiful, though the material seems somewhat strange; no doubt because it is new to me. They are built of buff colored brick (a good many similar to the Roman brick) and buff terra cotta of a very ornate character, and mostly with an Italian Renaissance feeling about them. The Hotel Imperial is one of the most notable ones of which I speak.

The buildings which I had been familiar with, by seeing them in the journals, look hardly so well in execution; but the detail as a rule seems fairly good all round—I think much better than at Chicago. In some of the buff buildings which I have mentioned (not in the Imperial) they seem to be making the detail remarkably fine—so small, in fact, especially in one large building, that it is almost fine enough for inside wood finish in a dwelling house.

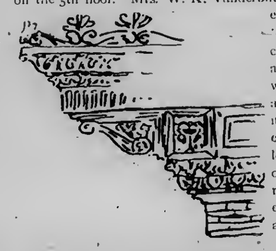
Taking things altogether, I am more convinced than ever that what Canadian architects lack is not ability, but rather the opportunities which seem to so surround their American brethren. I have several times analyzed some of the buildings here which are of a very attractive character at first sight, and which do not seem to decrease in value on examination, and I think there is not any better proportion or profile of moldings than what I have been quite used to in Toronto; but I think it is the addition to this of a free use of stone and carving and other enrichments which gives it a wealthy appearance compared with our buildings, which show a forced economy of architectural ornament. One of the most used molding enrichments employed here, I think, is the egg and dart, in almost endless variety; and I never before realized what an effective one it is, though I should judge it is somewhat a costly one to cut in stone, but in terra cotta there is not that objection.

I was very much disappointed in Fifth Avenue at first, as from what I had heard of it I had formed the highest expectations regarding it; though at the same time it is a very fine street, and I will be able to give it somewhat of its true value when my first impressions of it wear off. The street which has impressed me most, so far, in any place, was one which I saw in Cleveland, Ohio, two years ago (not Euclid Avenue) but perhaps in that case it was because I came on it unexpectedly. There the houses have the advantage of being back from the street a hundred feet or more, which greatly adds to their appearance.

A very peculiar thing to me, here, is the rock quarrying going on in several places in the city to lay the foundations of intended buildings. As a rule, they have a couple of boilers supplying steam to three or four rock drills, and strangest of all, the strata of the stone is almost perpendicular to the horizon, and the material appears to be nearly or altogether of granite. I saw the party wall of one ten storey apartment house built of this stuff, and adjacent to it they were building a foundation of the same material, and it was the most awful piece of rubble work I have ever seen or even heard of. The minimum thickness of the wall would be, I should say, nearly 3 ft., and in some places the great stones they were piling up across the wall could not be less than 4 ft. 6 in. long, and I think the one they were bedding on the wall (with a derrick) as I came along could not be many inches short of 5 ft. They were building it in cement mortar, and were very carefully filling in the cavities with small stone, but I supposed that this latter was because a man who appeared to be the owner or architect was watching them pretty closely. I think the wall was hardly as regular as this sketch. You can imagine my surprise at seeing this class of work here, especially as it was on Eighth Avenue, right against Central Park.



I have been helping the young man who is doing the drawings of a mission building they are putting up on 42nd street in this city. It is 6 stories in height and the floors fire-proof, with a gymnasium on the 5th floor. Mrs. W. K. Vanderbilt is paying for the work, and it is expected to cost about $250,000.



ROUGH SKETCH OF ILL-PROPORTION.

When the firm found out I could do a little with iron he ms and columns, they left the iron work almost entirely in my hands, and I have made 3 or 4 sections of it (to ½ scale) as there is a little court to it, with beams of different levels on the same floor and bent ones for the gallery of one large room, and it makes it quite complicated in some parts for arranging for the fire-proofing.

It might be interesting to you to know that the terra cotta (buff) cornice alone, as per sketch, some 75 ft. on front elevation with returns of about 25 and 10 ft. on the sides, will cost $4,000.

HAMILTON'S NEW BUILDING ORDINANCE.

THE provisions of the new building ordinance lately passed by the City Council of Hamilton, referred to in the CANADIAN ARCHITECT AND BUILDER for December, are as follows:

1. The following section is hereby substituted for Section 5 of said By-law:

(5) No person shall deposit in any public street, lane or alley in the city any material to be used in the erection of any new building, or the repair or alteration of any old building at a cost of over $100 until a plan or description in accordance with the requirements of section 7 of chapter 41 of the Consolidated By-laws has been lodged with the inspector of buildings, and such person has obtained from the inspector a permit in writing for the deposit of such material, the inspector of buildings shall give a permit in the form appended to this By-law.

(5 a) No person shall, either personally or through anyone acting for him or with his authority, deposit or place any building material in or upon any public street, lane or alley within the limits of the city, except for the purpose of building or repairing, and in every case such building material shall be so placed as not to obstruct the surface drainage of such public street, lane or alley, or the free use of any public hydrants, or to occupy more than is necessary of such public street, lane or alley, and in no case more than one-third the width thereof in that portion of the city bounded by Catharine, Hunter, Bay and Cannon streets, and in that part of King street between Catharine and Wellington streets, or more than one-half thereof in any other part of the city, the space so occupied not to extend along such street, lane or alley further than the frontage or depth of the lot so being built upon, except that it may extend in front of the lot on either side, so long as the occupant of such adjoining lot may consent thereto; provided always that if the owner or tenant of the real estate on the opposite side of the street, lane or alley shall require at the same time to use any portion of the street, lane or alley for the deposit of building material, then, in such case, each party shall be restricted to the use of one-fourth of such street, lane or alley instead of one-third as aforesaid in that portion of the city bounded by Catharine, Hunter, Bay and Cannon streets, and in that part of King street between Catharine and Wellington streets, and to the use of one-third of street instead of one-half thereof in any other part of the city, but every lane or alley must be kept open for traffic to a width of not less than eight feet, and such material shall not in any case be allowed to remain in any public street, lane or alley for any longer time than may be reasonably necessary for the completion of the work for which such building material is being used. Nothing in this By-law contained shall be construed to interfere with the rights and privileges granted to the Hamilton Street Railway Company or H. & D Street Railway Company under and by virtue of the By-laws relating to such companies.

(5 b) Every person who shall deposit or place any building material upon any public street for any of the purposes hereinbefore mentioned in that part of the city bounded by Catharine, Hunter, Bay and Cannon streets, or in that part of King street between Catharine and Wellington streets, shall, while any part of the material remains upon such street, enclose and keep enclosed the ground thereby occupied with a close board fence of a uniform height of not less than six feet, the public sidewalk to be left clear in all cases where it is not necessary to occupy it, and to be roofed over, wherever necessary, at a height of not less than eight feet above the level of the sidewalk with two thicknesses of one inch boards, and where it is necessary to occupy the sidewalk with building material, a plank sidewalk three feet wide shall be made by the person depositing the building material, such sidewalk to be made immediately outside of the said fence, and the ground covered thereby to be reckoned as part of the space which the person depositing the building material is allowed to occupy.

(5 c) Every person who shall deposit or place any building material upon any public street for any of the purposes hereinbefore mentioned in any part of the city other than that portion thereof bounded by Catharine, Hunter, Bay and Cannon streets, or that part of King street, between Catharine and Wellington streets, shall, while any part of the material remains upon such street, enclose and keep enclosed the ground occupied thereby with a board fence of sufficient height and strength to fully protect the public from injury or danger therefrom, and if the public sidewalk shall be enclosed within such fence, he shall make a sidewalk three feet wide immediately outside of said fence, and the ground covered by such sidewalk shall be reckoned as part of the space which the person depositing the building material is allowed to occupy.

(5 d) The fence, roof and sidewalk mentioned in the preceding paragraphs of this section shall be removed by the person by or for whom they were erected as soon as the building material enclosed thereby has been used or removed, and he shall also thereupon put the street and sidewalk where such material has been deposited in as good repair as it was before such material was placed thereon.

2. The following section is hereby substituted for section 6 of said by-law:

(6) Whenever any person or persons, whether contractors or proprietors, shall be engaged in the erection or repairing of any building or other structure whatever within this city, and shall cause or permit any building material to be placed on any public street, lane or alley in the said city, and whenever any person or persons who shall be engaged in constructing any sewer or laying any gas, water or other pipes or conductors, in or through any of the streets, lanes, alleys, highways, sidewalks or other public places in said city where persons pass and repass, whether by appointment of the city, or its agents, or as contractors, or otherwise, it shall be the duty of all such persons to protect the public from injury therefrom by placing a sufficient number of red lights upon such materials, rubbish, goods, wares and merchandise, heaps, piles, excavations or any other thing so caused or permitted by them to be or remain in or at any of the places above mentioned, and in such manner as to enable the same to be distinctly seen by all passers-by, and to continue such lights from dusk till daylight, during every night in which any such obstructions are allowed to remain in or at such place, and if such materials or obstructions are enclosed by a fence such lights shall be put on or above the fence.

(6 a) No person shall allow building material of any kind under his control to remain in any public street, lane or alley after dark without being closely piled, and being also sufficiently lighted in the manner hereinbefore required, or to remain more than twenty-four hours in any public street, lane or alley without being properly enclosed by a fence in the manner hereinbefore required, or to remain in any public street, lane or alley, in any other manner or for any other purpose, or for any longer time than is permitted by the provisions of this bylaw.

(6 b) No owner or occupant of any building shall place or construct, or authorize the placing or construction of any eavetrough, conductor, water pipe or gutter pipe so as to permit or cause the water from the roof of such building to escape upon, flow over or run across or upon any public sidewalk, provided there is an adjacent sewer, and the owners of all buildings hereafter erected or rebuilt shall connect all conductors or gutter pipes upon that part of the building abutting upon any street with the sewers upon such street as the case may be, and whenever the pavement upon any street, not being a wooden sidewalk, is being constructed or reconstructed, the owners of all buildings abutting upon the street shall connect with the sewer upon such street every conductor, water pipe or gutter pipe, the water from which would otherwise flow over or upon such pavement.

(6 c) It shall be the duty of the inspector of buildings to keep a record of all permits granted under this By-law, and to enforce the provisions hereinbefore contained, except the last provision contained in section 6 b, and to prosecute all persons who, after due notice from him, shall fail to comply with the requirements thereof, and as to the last provision of section 6 b, such duty shall be performed by the street commissioner.

3. Any person or persons guilty of a breach of any of the provisions of this By-law, shall for every such breach be subject to the penalties imposed by chapter seventy-one of the Consolidated By-laws of this City.

4. This By-law shall take effect on and from the passing thereof, but nothing herein contained shall limit or restrict the rights as to space of those who may have erected fences enclosing building material under the By-law hitherto in force; but with regard to all such fences heretofore erected and now standing, the By-law hitherto in force shall continue to have effect as to the space thereby permitted to be enclosed by such fences for the deposit of building material.

NOTES ON PLASTERING.*

By J. M. GANDER.

SPECIFICATIONS usually call for laths that are dry, free from knots, sap, and bark. There is only one point here that needs discussing—that is, that laths may be too dry, and for this reason, that when the mortar is put on it will swell them up to such an extent that the key is almost squeezed off. When the lath afterwards shrinks the mortar is quite loose. A good and sufficient key is obtained by spacing the laths ¾ of an inch apart, but for two coat work I would recommend rather less space, provided the mortar is well rubbed through, for the wider the key the sooner will the ceilings get dirty and stained at the key. This staining is cause by there being a greater quantity of mortar between the laths than on them—consequently it will shrink and leave small channels that will catch and hold what dirt is floating in the air. This is generally obviated by having three coat work, the first or scratch coat forming a foundation and causing the drying to be more even.

When three coat work is specified it is also necessary to state that the first coat whether for wall or ceilings shall be quite dry before the second coat or floating is put on, otherwise in the lath work the key will be broken. I know some people will say it is better to put on the second coat before the scratch coat is too dry. The only reason I know of for that argument is that it will take less material and labor, consequently it can be done cheaper. For the first coat on walls it should be put on pretty soft and well rubbed in with the points of the trowel.

When the brick walls are rendered, they should always be done before the strapping is put on, otherwise the battens will shrink, and perhaps just behind them might be seen daylight through the joints in the wall, and as a chain is only as strong as the weakest link that is in it, so it is with the wall—you may cover all over except just the spot that most required to be done.

In selecting lime for mortar it is best to choose that which is generally described as "poor lime." The word "poor" in this case does not mean that it is so in quality, but rather the reverse—the poor limes will not take as much sand as the rich or fat limes, but the work is very much stronger and better and will set hard in some situations, as for instance a damp wall in a basement, where a rich lime would not set, but in using it it is better to run the mortar a few days before it is required to prevent what is known as blistering or blowing. Here in Toronto I prefer the Georgetown lime, although there are several kinds, and generally of a very good quality. For finishing the Guelph white lime is the best, being of a good color and will trowel to a good face.

It is, of course, necessary to have good sand that would be described as clean, sharp, and coarse, but all sand that would come up to that description would not necessarily make good mortar; for instance, if you take the lake sand and use it alone (that is not mixing other sand with it), it will get hard on the face, but if you break the surface the inside will invariably fall to powder. There may occasionably be an exception, but it is very rare.

Sometimes the sand may be too coarse, then you will not have firm solid mortar, as the spaces between the particles of sand are so large, and being filled with lime, there is no strength in it. In that case it will be necessary to use some finer sand with it to fill up the interstices, so as to make a compact, solid body.

You cannot lay down any hard and fast line as to the amount of sand a given quantity of lime will take; the proportion must always be determined locally; it will vary from three to six parts of sand to one of lime in London Eng., with Dorking lime about three at Sutton Bridge, in Lincolnshire; with Peterborough lime, I have used as much as eight; in Brighton about four, and in Toronto, with what is known as "Bloor St. West sand" about five parts of sand to one of lime. So with hair, it is possible to put too much in. When it is of good quality and long, and too much is used, it will make the mortar so tough that you cannot get it to key through the laths.

As far as possible it is well to do without gauged work. Of course at times it becomes a necessity, but it is seldom satisfactory and never certain in result.

Lately we have had introduced here a new article for plastering, Adamant, and if it fulfils all that is claimed for it, it will certainly fill a long felt want. It is a most useful article for winter use, as you are able to coat and finish complete any reasonable amount in the same day. This is a great advantage in occupied houses.

Soapstone is, comparatively speaking, a new kind of finish, and I think for finishing bath rooms and servants' offices it is the best thing we have. When it is properly done you can take a sponge and water and wash it clean, which is very necessary sometimes after plumbers and hot water men have finished their work.

The ordinary kind of finish here is described as hard finish, that is, putty made from Guelph white lime and to which is added some plaster just as it is going to be used. The addition of plaster and plenty of trowelling constitutes the hardness. Another kind is described as sand finish, that is, a little sharp, clean fine sand, added to the putty, either with or without the plaster. When the buildings are going to be papered or decorated immediately after being built, sand finish is the best, as the paper is less likely to peel off. If a thoroughly good and fine surface is required for decorating, that which is known by the name of "trowelled stucco" is the best finish, but on account of the extra labor required it adds considerably to the cost. This is composed of two parts of sand to three of lime. The second coat of mortar for this finish is left rougher on the surface than for hard finish. The stucco is put on the wall and traversed in with a rule reaching from top to bottom of the wall—that is, when the wall would not exceed 14 ft. in height. When it has been got thoroughly straight and true it is hand floated well with water until all the fat or superfluous lime has come to the surface. The process of hand floating is to take out all irregularities or waves. It is then trowelled down, and if properly done, you have as far as is possible, a perfect wall.

Of course when expense is not an object and time is, we have the various cements, such as Keene's, Martin's, and Parian, all of which can also be used for running mouldings such as architraves, base dados, etc. These can all be painted immediately the plasterer has finished. The base of all these cements, as also plaster, is gypsum. The different results are obtained by mixing various chemicals to retard the setting and giving time to work it and bring it to a true, hard face, which is capable of being polished equal to marble.

When these cements are used as a finish, ordinary lime mortar alone should never be used. The lath work should be covered with two parts hair mortar, with one part Portland cement added for scratch coating. The brick walls and second coat of lath work should be floated with a mixture of three or four parts of sand to one of Portland cement, the surface

* Paper read before the Toronto Architectural Sketch Club, Dec. 23rd, 1890.

left rough but true so as to form a good key for the finish; or the back ground may be done with the same cement as you are going to finish with, only with sand added. When this is the case, ordinary lath nails should not be used, unless they are galvanized or the heads given a coat of shellac. When the lathing is done, zinc or copper nails are still better. If this precaution is not taken the heads of the nails will rust through to the surface nomatter what you may do. The finish known by the name of "stucco finish" left from the float may be done with any lime, or cement with sand.

In selecting sand to use with Portland cement you cannot very well get it too coarse, as neat cement is far stronger than when mixed with sand, it being exactly the reverse of lime; but even with this it is well to use, comparatively speaking, some fine sand to make the body compact, without what might very well be called a waste of cement.

In England, for building sea walls, harbors, breakwaters, etc., the material generally used is very coarse gravel, to six parts of which is added one of washed sand and one of Portland cement. The whole of this is thoroughly mixed with water and cast into blocks of various sizes about 18 inches square by 3 ft. long. They are allowed to get quite hard and are then built into position.

When water tanks or swimming baths are built of concrete or brick and are then lined with Portland cement, it is well to use a small quantity of washing soda with it which causes the cement to set more quickly and also helps to increase the hardness; but for outside work, such as moulding or ornament, soda has an objectionable feature—an efflorescence on the surface which makes it unsightly for a time.

Brick work should always be well wetted before plastering is done, as it gives a better bond to the work, and in the case of cement, if the wall absorbs the moisture too quickly, it will never get thoroughly hard, or, in plasterers' language, "the nature has all died out" before it has had a chance to set.

During the months of July and August you can never make so satisfactory a job of plastering as you can in the spring or fall of the year when the drying is less rapid. Portland cement should never be painted for at least one year. Lime mortar should never be mixed with Portland cement when the work is described as being done in Portland, but Portland cement may be added to lime mortar with great advantage.

Roman cement is not as much used now as formerly, Portland having almost superseded all other cements of that kind. It was used in England some years ago very extensively and was most useful for casting sections of large brick sewers—the brick, generally about 12 to 16 in number, being put into a trough that was shaped to the right curve of sewers, and spaces about ½ inch being left between them; they were then well grouted in with the cement, and in about half an hour they could be turned out of the mould and were ready for use.

Mastic is a cement of a different nature to any used for plastering, being composed of sand and litharge, and when about to be used mix with oil instead of water. There is a very good sample of this work done at the corner of Carlton and Church streets in this city.

When repairing is done old laths should never be allowed to remain on, particularly in the case of ceilings, as in a new lath there is quite a lot of ragged fibre; caused by the saw in cutting, which helps to bond the plastering; in an old lath that is all filled up.

SANITATION AND HEATING

NON-CONDUCTING COVERINGS FOR HOT WATER PIPES AND RESERVOIRS.

In a series of articles being published in the London *Builder* on hot water supply, the following is furnished regarding coverings for pipes and reservoirs for saving heat:

It is no exaggeration to say that very shortly no apparatus for hot water supply will be considered complete or finished if the whole system is not insulated, so to speak, so that almost every particle of heat absorbed by the water in the boiler will be obtainable from the taps, instead of nearly fifty per cent of it being radiated from exposed surfaces, and worse than wasted.

There are at this moment hundreds, if not thousands, of hot water systems that, by being carefully covered, would be converted from miserably inefficient to highly satisfactory appliances—this in particular with the tank system, when the tank is so commonly fixed in a cold, draughty roof.

An interesting instance of the success attending the covering of pipes occurred quite recently, in which a residence was fitted with a complete system of hot water supply pipes on a scale sufficiently large for a good boiler in a five-foot kitchen range, but owing to a delay experienced in obtaining the range in question, another of a smaller kind, three feet, was fitted up and connected to the chimney and circulating pipes for temporary cooking and hot water supply. It was not supposed that this little range, with its boiler, would do much in the way of water heating, but to the astonishment of everyone it gave a really abundant supply of very hot water in every part of the house as quickly in the morning and altogether as satisfactorily as a larger range would be expected to do.

This desirable result was wholly brought about by the pipes and cylinder being everywhere carefully covered with a sufficient thickness of felt. It really does seem opposed to all reasonable and workmanlike principles to allow such abundant opportunity for heat to be thrown away, while labor and fuel is being expended in the kitchen apparently for this object. The waste of heat is not always the only ill result experienced, as in many instances the warmed air is very objectionable, and if a hot water pipe is carried alongside a soil pipe it is possible for a very unpleasant feature to introduce itself. It is a very customary practice for a hot water fitter to carry his pipes up in the casing that is nearly always to be found passing from the bottom to the top of the house, this casing containing all the different pipes of the house, such as the cold service from the main, the cold service down from cistern, the water closet cold water services, and, very commonly, the soil pipe. There is no objection to his making use of the casing if it is large enough to hold a few more pipes, and it is often used of necessity, as to carry pipes openly through well decorated rooms is out of the question; but to carry hot water pipes up this case without felting them is an exceedingly bad practice, as they are not only brought into contact with very cold surfaces (they have frequently been found wired on to cold pipes, four or five pipes in a bundle), but the heat radiated causes a draught or current of air to set in, as we find in a chimney.

When a casing contains pipes that radiate heat, that casing, within a few moments after heat is felt within it, is converted into a flue, as by applying heat to air it can be made to circulate to all intents and purposes like water. Air that is brought in contact with heated surfaces becomes heated and rarefied, and, thus being made lighter than the surrounding air, rises, and cold particles immediately flow in to take its place, they becoming heated and following the first particles, and so on, so that it resolves itself into a stream of warm air flowing out of the upper part of the casing, and cold air flowing in in corresponding volume below. This may be excellent in practice when hot water pipes are used for effecting ventilation; but it is fatal to hot water services, which are particularly required to keep the heat within them; in many instances they are cooled at about the same speed as they would be if placed outdoors when a strong wind was blowing.

It may be argued that if the casing is stopped off at its two extremities the trouble will be obviated; and so it would be if the casing was perfectly air-tight everywhere, and had no cold pipes within it. But this is never the case; there are always numbers of crevices and apertures which permit of a tolerably free ingress and egress of air.

The best material for covering these pipes, and also the reservoirs, is hair felt; hair is a natural poor conductor of heat, and nothing surpasses it for this purpose, especially as it is so easy of application. This felt, which is readily obtainable in sheets, is usually cut up in strips for pipe work; the strips are wound upon the pipe spirally, being secured here and there with cord or wire, but where spiral winding is impossible it can be tied on in lengths, which answers equally as well, but has not such a good appearance.

The best and most complete arrangement for pipe work, but which entails a little greater expense, is to have the felt wound on spirally in one direction, say from left to right, and well secured with cord; then cover this with good canvass, also wound on, but in the opposite direction, and this secured with wire.

It is most necessary, to secure the best results, to have the felt thick enough; hair-felt is sold in great quantities about 3-16-inch thick, but this is not thick enough for good work. If possible, have it ½-inch thick, and a marked benefit will be had by using even thicker than this, or, say, two thicknesses of ¼-inch.

In felting cylinders, it is the best plan to take sufficient sheets of felt, and then sew the edges together to form one sheet large enough to go all round the reservoir. This sheet can then best be secured by bands of hoop iron or brass passed round the top and bottom, and around the middle; these bands being tightened up by having a bolt to draw the two ends together. After this circular piece can be cut for top and bottom, these pieces being sewed on to the top and bottom edges of the large sheet. Tanks can be covered in exactly the same way.

Sometimes it is desired to encase the tank or cylinder with woodwork. This makes by far the neatest job, though more expensive, and it causes a little trouble should it be necessary to open the reservoir under some circumstances. If it is decided to have a casing it is very important that the space between the woodwork and the reservoir be well filled in with some poor conductor of heat, such as cow hair (plasterers' hair), slag wool, or even dry sawdust answers very well when the casing can be filled from the top. If the casing is not "packed," with something it would be much better to be without it, as it would have a current of cold air passing up through it the same as explained with the general pipe casing just referred to.

If the hot water service pipes are carried up through the house without entering the general pipe casing mentioned, and it is proposed to incase them for the sake of appearance, this casing must also be packed for the reasons explained, but this is frequently neglected with the worst results, as the casing of pipes is frequently done for appearance sake only, the question of radiation not being considered.

Occasionally it is found practically impossible to carry the pipes up inside the house, in which case it becomes necessary to carry them outside. This is very objectionable, but where it cannot possibly be avoided the objections do not avail, but they must be guarded against. In the first place, the pipes must be incased, and the casing ought to be of fair size, so that 1½-inch of packing can be filled in between the woodwork and any of the pipes. The packing must fill the case tightly, and it is imperative that the casing be well and tightly secured to the wall, as should it get loose, the woodwork and the packing will come away from the pipes and leave them exposed.

When pipes are carried outside the packing is not only needed to prevent great waste of heat, but there is a danger to be guarded against in cold weather when the pipes are liable to be frozen and an explosion possibly ensue, as the only outlet for any steam that may be generated in the boiler is at the upper extremity of the expansion pipe, unless a safety valve is provided.

DECORATION AND FURNITURE

ART EDUCATION IN CANADA.*

By W. Thomson.

In these latter days of the nineteenth century, when so much attention is being given the subjects of Protection, Free Trade, Reciprocity, or something to stimulate and advance commerce, it occurs to me that quite a reformation might be made in the art world. Art education elevates the people, aids commerce and brings wealth to the nation.

In Canada protection is needed from bogus art dealers, bogus art schools and bogus teachers. What are we going to do about this art education which just now is agitating our little circle? Are we going to leave it solely in the hands of the Government, to be controlled by the ministers who know not the first thing about art, and are therefore incapable of successfully conducting such instruction or are we to have it done by a competent board and rely on public beneficence for support? But first I will describe where our failing and weakness lies. The first question that presents itself to our notice is, what is art education? Was there ever a more misconstrued question than this? To the vast majority it is nothing more than having their sons and daughters (especially daughters) learn how to "paint by hand," with the result that they are disgusted with themselves for having spent so much money to so little purpose, or, as in perhaps the majority of cases, so conceited in their belief in the wonderful attainments of their children as to be lead to conclude that the limit of art education has been reached, and thus they remain ignorant of the necessity and usefulness of such education.

As for their sons becoming artists—No! No! Keep them away from it and poverty! This seems to be the general ideal of an art education in Canada, and it is by reason of this great misconception that we Canadians, with such grand possibilities, do not advance as we should. If we continue to disregard this branch of education, our industrial and commercial growth will be stunted.

But I have still faith to believe that the time is coming when this branch of education will be raised to its proper position, and have offered to it all the facilities and advantages necessary to its successful development.

Our Legislature must be approached and convinced by determined and practical arguments, that a different course to that of the present will have to be pursued, as our experience, short as it is, has proved conclusively that the whole system is wrong and detrimental to the prosperity of the country commercially as well as artistically.

What does true art education mean to the country? Just now the attention of everyone is directed to our enormous hidden wealth in the shape of mines of gold, silver, nickle, copper, iron, etc., and I believe there is a possibility of our producing marble of an excellent quality, all in such quantities as to make the scientific world wonder. Our neighbors across the line look at us with envious eye, coveting the prize we thus hold. Even now we are discussing the advisability of closer trade relations with them, so that we can ship the ore over and let them do the rest. The idea is ridiculous, and shows our lack of art education and our commercial weakness. Hear what Christopher Dresser has to say on the subject: "A wise policy induces a country to draw to itself all the wealth that it can *without parting* with more of its natural material than is absolutely necessary. It is better thus to part with but little material and yet secure wealth, than it is to part with the material at a low rate either in its native condition or worked into coarse and low priced articles and become impoverished."

Men of the lowest degree of intelligence can dig clay, iron or copper, or quarry stone, but these materials if bearing the impress of mind are ennobled and rendered valuable, and the more strongly the material is marked with this ennobling impress, the more valuable it becomes. By way of illustration we will take, not our valuable ore, but a common piece of clay—every day clay—of which we have such an abundance on the streets of this fair city of ours. In the hands of one man it becomes a drain tile or a common, ordinary flower pot worth five cents a piece—twenty five or fifty cents a dozen—in the hands of another man it becomes a vase or a decorative piece of ornament, worth how much—fifty cents a dozen? No! sold by the piece from one dollar up to twenty; yes, fifty or one hundred. What caused its greater value? Education—art education. In the first instance the man was simply a machine working for a day's pay, without the application of any brain power. In the other he had an art education, and consequently his work was ten, aye, a thousand times more valuable to the country, both commercially and artistically. Thus you see the country retained that much more wealth by one person's education. Take as another illustration our iron ore. I have said that our American cousins are looking at it with a covetous eye. They see to what value they can put it; how they can increase its value a thousand fold, and send it back to us in beautiful and useful forms, charging us a hundred times more than they paid us for it. They are better educated artistically, spending enormous sums every year adding to the facilities for art education. The result is, they are enriched commercially while we are impoverished, simply because we think it folly and waste of money to have anything to do with art education.

Look at our manufacturing industries—stove manufacturers and iron workers generally; furniture manufacturers, carpet weavers, wall paper manufacturers, glass stainers, lithographic workers, silver plate, stone carvers, decorators, etc.—a small army of industries who feel the want of home education, for lack of which they have to pirate the designs of our Yankee cousins and adapt them to their own wares, whereas had their workmen the proper facilities for study and reference, things would be entirely changed. Valuable men as designers, modellers, etc., would be retained in our country; new and original designs would be produced which would command a higher money value and a larger market. But why go on enumerating details?

I now come to consider the means whereby we may reach the desired end, or in other words, what system we should to adopt to further encourage and improve this branch of education. Art teaching or education under the present system will never be a success, because the forms of entrance examinations are ridiculously wrong. The awarding of prizes, medals, and especially teachers' certificates, is a farce. It seems as though the standard of the schools is to be guaged by the large number of pupils who receive diplomas, whereas I believe that is the best argument that can be used against it, because the majority of teachers who have passed these examinations are entirely incapable of educating the young mind in *true* art principles, consequently the very first principles the pupil receives are wrong and tend to kill any germ of art instinct that may be in him. Coutre, in his conversations on art, says in connection with the organization of Art Schools, that the elementary teaching which is of so much importance is usually confided to the least advanced amongst the teachers. This is a fatal error; no amount of diligence, however well directed, can make up for inexperience. It is not my intention to lay down any positive rules for the guidance and regulation of Art Schools, as I believe that should be done by a selected committee of qualified men, but merely to suggest a few qualifications that I think should be necessary.

In the first place, we must have a thoroughly qualified and enthusiastic board of directors who will have power to arrange classes, adopt their own rules and regulations for their guidance, and above all engage experienced teachers. I would also suggest the following general rules:—

That students be advanced from one class of work to another according to the personal judgment of the instructors without formal examinations.

A series of informal lectures should be given on various art matters, such as the history of the arts, technical processes employed in them, criticism upon decorative composition, anatomy.

That a certain number of free scholarships be established.

That the students be compelled to draw from the skeleton and the different bones composing it, as most of the principal bones show or suggest their form, and a knowledge of their natural size must be invaluable to the student.

Lastly, art students must have art food—intellectual, artistic nourishment.

* Abstract of paper read before the Toronto Art Students' League.

The fact is we are starving, or rather, our abilities are being stunted for the want of artistic food; something upon which the mind may feed—something to gratify the eye. We are frequently hearing from our young men who go to the large cities in the United States and Europe that they are constantly having opportunities of seeing the works of masters in decorative work, such as stained glass, pottery, painting, etc. They inhale the atmosphere and are consequently benefited intellectually, artistically, and I might add physically, as the mind has acquired a satisfaction it has long craved for.

So we must have museums of good works—masterpieces of the various ages in all the arts—examples of which can now easily be obtained through the wonderful development of the graphic photo-reproducing processes. Our Government should make an annual grant for the purpose of collecting such works. Let us not be behind our sister colonies. What a grand example Australia is showing us; the Government grant some thousands of pounds annually on the art collections for their museums.

In conclusion, I will suggest something which might be done to give art students a stimulus and increase the interest in that branch of education. At present, in our city especially, there are quite a number of large public works in course of erection—The City Buildings, University, Parliament Buildings, etc. Some few weeks ago I was commissioned to take a look around the new Parliament Buildings to make sketches of interesting points, ornamental detail, etc. I wandered around with a feeling of disappointment that such a grand opportunity for appropriate decoration had been neglected. Although it is hardly justifiable to criticize the buildings in their present unfinished condition, still enough was completed to prove to me that quite an improvement might have been made in what is being done in the way of carving. I noticed that any panels or portions of the building with a suggestion of carving are being filled up with that common, very common, stereotyped piece of ornament which can be seen in almost every building that has been erected here within the past few years. Every dwelling of any pretentions has, seemingly without any motive, a little piece of this ornament either in terra cotta or carved in brown stone, all of which suggests to my mind that the stone carver is given full license to carve what he likes. I do not wish it to be understood that I find any grave fault with the present style of residential architecture; on the contrary, I must congratulate the architects of our city upon the strides that have been made of late in house building and decoration; and also the citizens upon their faith in and appreciation of the architects' and decorators' endeavors to create the beautiful, as evidenced by the many fine dwellings that have been erected in our city lately. We must exercise care even here, however, lest we err on the side of the ridiculous by employing too much meaningless decoration. I think I notice a growing tendency to plaster on ornament anywhere and everywhere without evidently the slightest thought of symmetery of design. In fact, some of our most costly houses are becoming monsters of ugliness.

I was speaking of the stereotyped and meaningless pattern of design used as ornament on the Parliament Buildings. Instead of all this scroll ornament, why not use, invent or cause to be invented, some new conventionalized ornament of Canadian wild flowers or *bas relief* of historic and allegoric events in Canadian history. Had we properly organized Art Schools and museums, inducements might be offered to pupils to submit designs for the different portions of such buildings. Even though a number of them might not be practical, something might be gleaned from them to suggest a good design, and I'm sure that some gratifying results could in this way be reached. Such action would result in giving great stimulus to art education.

Although too late for the outside work on the Parliament Buildings, there will be a great amount of interior decoration where some special inducements might be offered for designs; or, without going to such a high standard as should be required for this work, why not take a suggestion from Ruskin and offer prizes for the decorating of our Public School interiors which, with their bare walls, are an eyesore, and as for their outside appearance, the less said the better.

MODE OF MAKING FINE PRESS BRICK.

GEORGE CARNELL, of Philadelphia, Pa., the well-known manufacturer of hand and power brick presses gives the following concise directions for making fine front bricks:

1. It is important that the clay should be well tempered, a clay tempering wheel producing the best.

2. It is necessary to have sheds built expressly for that purpose, the roof being made so it can be opened to admit sun and wind; when required doors are also made to protect the sides of the shed in case too high winds prevail. In sheds built this way, the bricks can be dried with better regularity.

3. The bricks should be moulded free from flaws or sand cracks; the moulds, when in use, must be kept well cleaned by the off-bearer, as the accumulation of sand or dirt on the sides of the moulds, if not scraped off will make a variation in the sizes of the bricks when they come to be pressed.

4. The bricks are placed on the floor to dry. When nearly dry, a light sieving of sand is put over their faces and they are then turned over that they may dry more regular. When the bricks dry too fast, a damp carpet can be placed over them and sprinkled occasionally with water.

5. When the bricks are ready for pressing, say when they can be handled without finger marks, the press is then taken to the bricks (*or vice versa*); the bricks are then carefully placed in the press mould, care being taken that they are not marked while dropping them in. The bricks must be kept free from finger marks.

6. The mould, plate and lid should be kept clean; a sharp-pointed hard wood stick is best to clean the corners of the mould out with. This should be done, and the mould wiped out every few bricks; occasionally it will be found necessary to raise the bottom plate and scrape the dirt from around the sides; after cleaning, apply a little oil.

7. From the press the bricks are carried with paddles and laid on their flats, about six high.

8. When the bricks are partly dried, they are rubbed carefully with the hand, and hacked on their edges, pigeon-hole shaped, for drying. By pigeon-hole hacking, we mean placing the bricks two on two, and reversing them every course. After they have become hard enough to handle without danger of injuring them, they are placed on a barrow, with pieces of soft carpet or blanket between the courses; they are then hacked in sheds and are ready for the kiln.

9. After the day's pressing is finished, take the plate and plunger out of the mould, scrape all the dirt off, wipe clean and oil the mould, plate and plunger. By keeping the press and mould clean it will give better satisfaction.

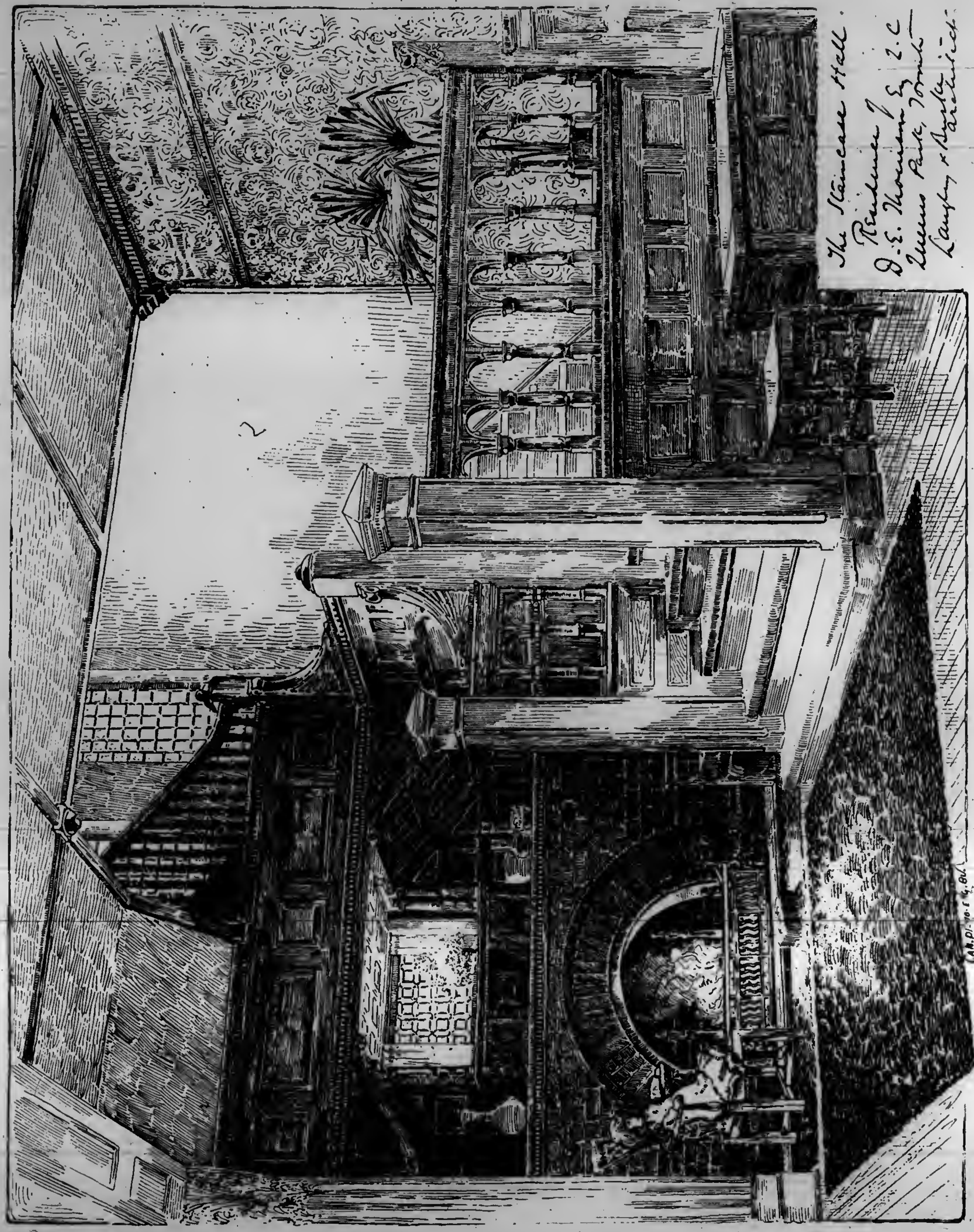
PARTNERSHIP NOTICE.

Notice is hereby given that the partnership heretofore existing between J. Alcide Chausse and E. Mesnard, under the title of "Chausse & Mesnard," Architects, of the City of Montreal, has this day been dissolved. The business will be continued by Mr. Chausse.

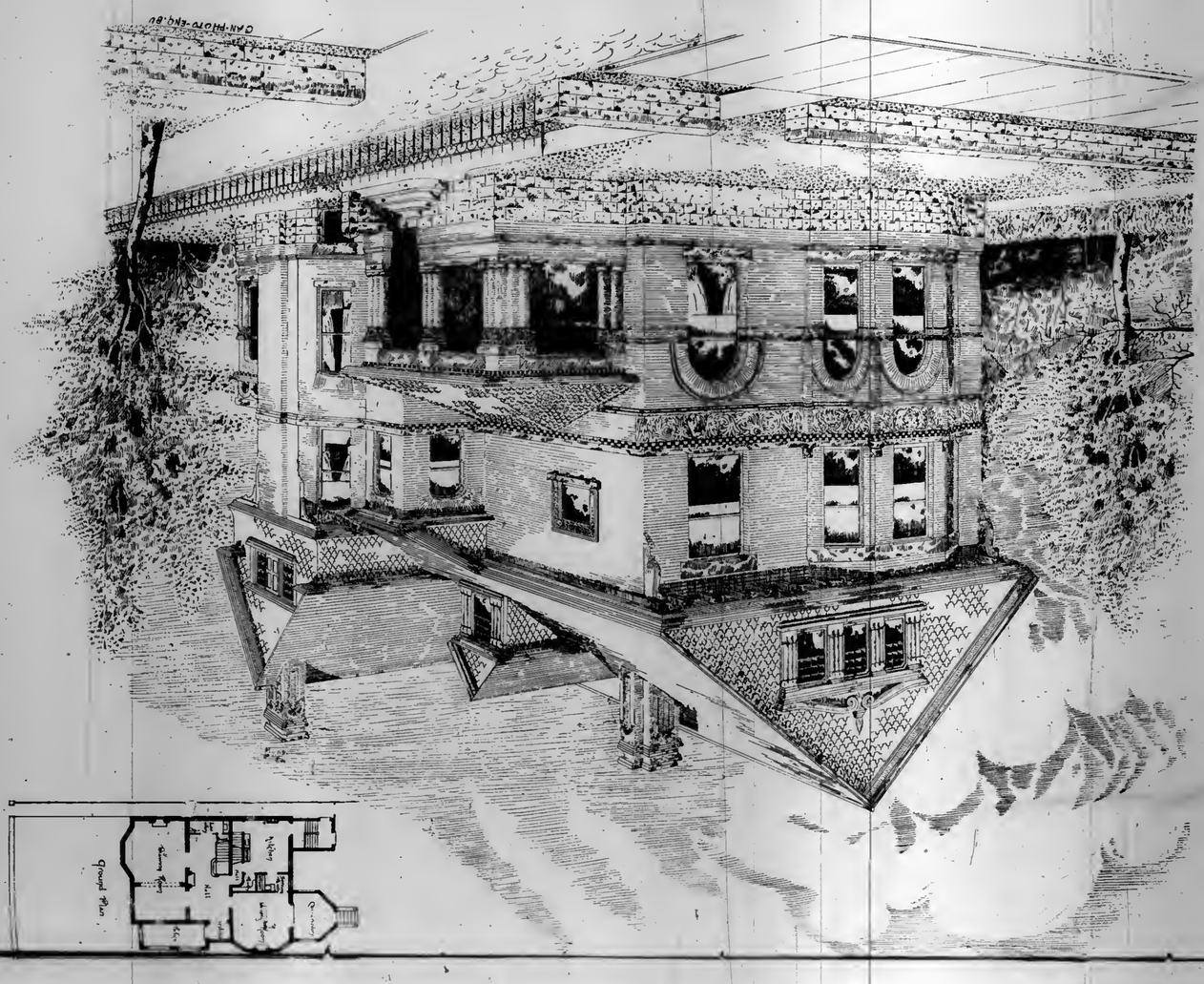
J. ALCIDE CHAUSSE.
E. MESNARD.

Montreal, Jan. 9th, 1891.

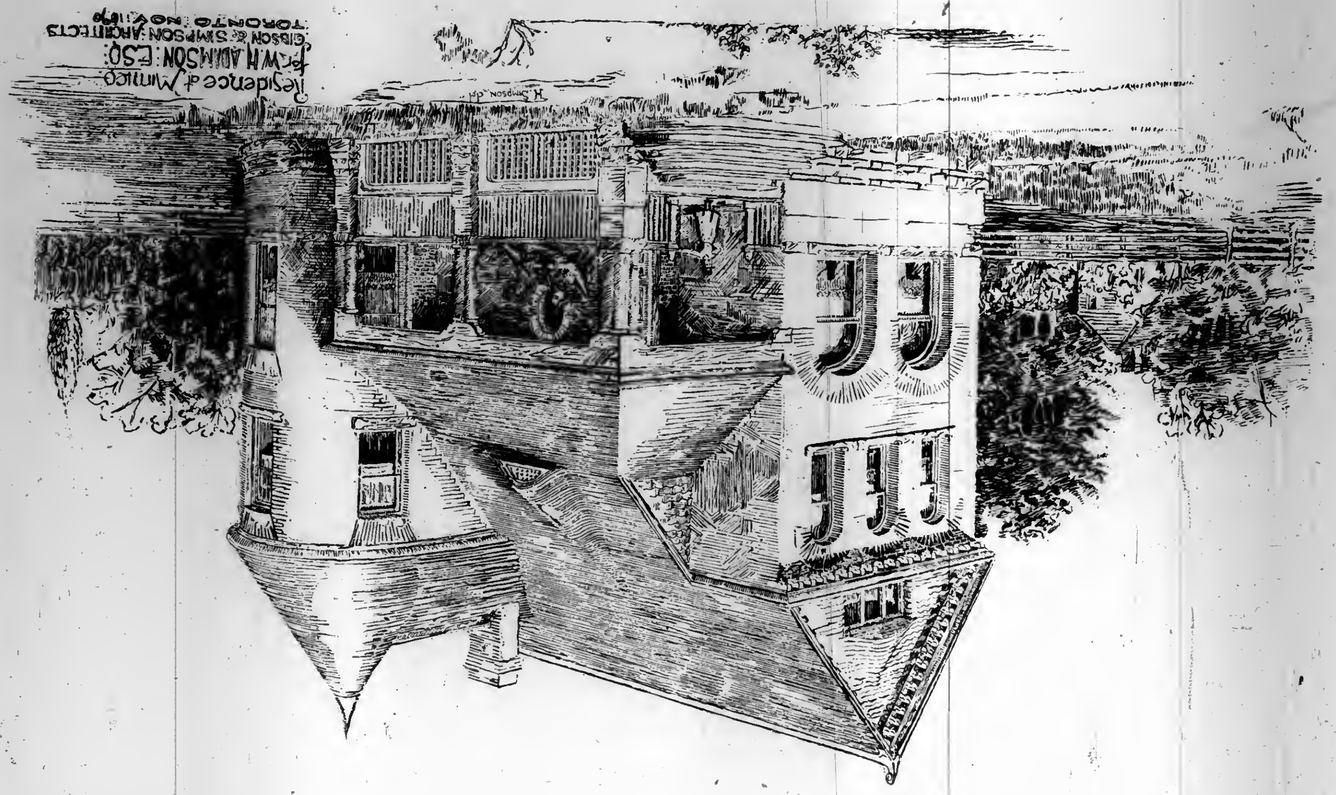
VOL. IV.] The Canadian Architect and Builder. [No. 1.



The Staircase Hall
Residence of
D. E. Thomson Esq. Q.C.
Queens Park, Toronto
Langley & Burke
architects



House for Mr. Wm. Goulding, St. George Street, Toronto.
Messrs. Gordon & Helliwell, Architects.



First Premiated Design, Quebec City Hall Competition.

Mr. E. Charest, Architect, Quebec.

CANADIAN ARCHITECT AND BUILDER.

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THE

CANADIAN ARCHITECT AND BUILDER,

A Monthly Journal of Modern Constructive Methods,

(With a Weekly Intermediate Edition—The CANADIAN CONTRACT RECORD),

PUBLISHED ON THE THIRD SATURDAY IN EACH MONTH IN THE INTEREST OF

ARCHITECTS, CIVIL AND SANITARY ENGINEERS, PLUMBERS, DECORATORS, BUILDERS, CONTRACTORS, AND MANUFACTURERS OF AND DEALERS IN BUILDING MATERIALS AND APPLIANCES.

C. H. MORTIMER, Publisher,

14 King Street West, - TORONTO, CANADA.

62 TEMPLE BUILDING, MONTREAL.

SUBSCRIPTIONS.

The CANADIAN ARCHITECT AND BUILDER will be mailed to any address in Canada or the United States for $2.00 per year. The price to subscribers in foreign countries, is $2.50. Subscriptions are payable in advance. The paper will be discontinued at expiration of term paid for, if so stipulated by the subscriber; but where no such understanding exists, it will be continued until instructions to discontinue are received and all arrearages paid.

ADVERTISEMENTS.

Prices for advertising sent promptly on application. Orders for advertising should reach the office of publication not later than the 12th day of the month, and changes of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The "Canadian Architect and Builder" is the official paper of the Architectural Associations of Ontario and Quebec.

The publisher desires to ensure the regular and prompt delivery of this Journal to every subscriber, and requests that any cause of complaint in this particular be reported at once to the office of publication. Subscribers who may change their address should also give prompt notice of same, and in doing so, should give both the old and new address.

THE City Council of Toronto will endeavor to obtain legislation which will empower the city to regulate the erection of scaffolds and buildings. So far as the erection of scaffolds is concerned, there is no reason to change the belief formerly expressed on this subject, viz., that no system of inspection of reasonable cost would be likely to prove satisfactory. There is undoubtedly required more thorough inspection of buildings under construction, and we might add, a greater degree of efficiency in the enforcement of the powers already at the city's disposal.

IT is satisfactory to observe that the suggestion made in a recent number of this journal regarding the enlargement of the space for traffic at the corner of King and Yonge streets, is engaging the attention of the Toronto civic authorities. The desirability of carrying out the suggestion was presented to the members of the Parks and Gardens Committee by the Chairman, Ald. Score, at a recent meeting. It is hoped that while circumstances are so favorable, definite action will be taken to relieve the congestion of traffic at this point. A very few years will suffice to demonstrate the wisdom of such action.

THE cost of scoria block pavement in Canada is in the neighborhood of $40,000 per mile. One-half this amount is said to be represented by freight and duty on the imported article. Tons of the material required to manufacture these blocks is lying waste at Sudbury, Ont., consequently there would seem to be ground for the belief that scoria blocks might profitably be manufactured and sold in Canada at one-half the cost of the imported material. Whether or not such an enterprise would pay would depend upon the willingness of towns and cities to spend $20,000 per mile in putting down a permanent pavement as compared with the cheaper, but less durable varieties. It is beyond question that by using the more expensive material they would be practising the truest economy.

THE time for receiving the competition drawings for the Montreal Board of Trade building closed on the first of the month, and according to a press report designs were received from five American and seventeen Canadian architects. The *five* men will have the advantage of a judge familiar with their style of work. We cannot understand the motive of the Building Committee in refusing to associate a Canadian referee with Mr. Hunt, and now, when the number of Canadian architects proves to be three times greater than that of the foreigners, the injustice becomes all the more palpable. We will be curious to know who the seventeen are, and presume the Ontario and Quebec associations will also.

THE contractors of Kingston have appointed a committee to labor with the architects in regard to the preparation of proper plans and specifications before being asked to submit tenders. It would appear from the account of the meeting in one of the local papers that plans were prepared somewhat on speculation, and that if the tenders did not suit, the proposed building scheme collapsed and nobody received any remuneration. The builders evidently reasoned that if the architects insisted upon being paid for their work whether the building went on or not, those people who "propose" building would be killed off. We can quite believe that an architect who had so little hope of being paid for his work would perform what he did in a perfunctory and slipshod manner, and we do not wonder that the builders should "kick" when asked to tender upon indefinite and inadequate data. The whole matter rests in the hands of the architects, who if they will honorably stand by each other and insist upon being properly paid for proper work, will earn the respect of both client and contractor, instead of being the sapient tool of the one and being anathematized by the other.

THE news of the death of John W. Root, of Chicago, arrived too late for notice in our last issue. The *Inland Architect* for January is a sort of memorial number, being largely occupied with notices of himself and his works. He must certainly have been a man of wonderful energy, power and push. He was given a thorough education, both collegiate and university, and during his university course his studies were largely directed toward engineering and other sciences which would be of help to him in his chosen profession. His total office experience, gained in three different offices, was condensed into two years, upon which he launched out, with a partner of apparently no greater practice, into a practice which in a few years grew to be phenomenal. His opportunities were great, sometimes self-created, but nevertheless opportunities, and the wonder is how he designed as well as he did and how he contrived to escape with so comparatively few glaring mistakes. In regard to his practice, one of his memorialists says: "It had opportunity and temptation to express itself in every mood of versatility by reason of the incessant demands made upon its resources by the exigencies of a large practice. It would be a miracle indeed if, in this public exposition of an artists' inner life, illustrated by hundreds of buildings of every grade, we did not discover occasional evidences of carelessness and haste, of momentary caprice, of indifference begotten of fatigue, when his genius was off its guard. These evidences no one was so prompt as Root himself to point out and condemn."

QUITE a "breeze" has been raised in the Toronto Board of Works over the assertion of Ald. Hill that the city stood to lose $10,000 on account of the construction of an important sewer by day labor instead of by contract. The opinion of Ald. Hill, a contractor of many years' experience, should have great weight, despite the mass of figures quoted in apparent contravention by the Chairman of the Works Committee. The almost invariable experience of architects has been to the effect that day labor is considerably more expensive than contract work. As long as human nature is what it is, such will be the case, and especially in corporation work. From inspector to mortar-mixer, the tendency is to spin out the job, there being no deeply interested boss to insist on strict attention to business. With a purchasing

agent of strict integrity, and an inspector who thoroughly understands his business, the work and materials may be of a rather better class, but the work in the long run is certain to cost more. The same integrity and competence on the part of city officials should secure in the case of contract work practically as good a job at less expense, and without the same uncertainty as to ultimate cost. It might be a wise policy for the sake of good work to perform by day labor works costing not more than say $500, and which would not afford the cost of such inspection as would be necessary were they carried out by contract. The gist of the whole question may be summed up in this: If the city is to get the worth of its money, either method requires honest and thoroughly competent supervision.

IN order to be able to present to our readers at the earliest possible date a report of the proceedings in connection with the third annual Convention of the Ontario Association of Architects, we have not only omitted much interesting matter intended for publication in this number, but have also increased the number of pages for this issue. The length of the report of the business transacted and of the remarks of the various speakers at the dinner makes it necessary to reserve publication of the several valuable papers read before the Convention, together with the discussions thereon, for a future issue. From the same cause we must postpone for the present any comments which might be suggested by the proceedings of the Convention, further than to express pleasure at the success which marked the occasion, and at the growing interest which manifests itself at each annual gathering. The Association has accomplished infinitely more during its brief existence than its most sanguine promoters could have hoped for, and bids fair to maintain an equal rate of progress for the future.

ONTARIO ASSOCIATION OF ARCHITECTS

THIRD ANNUAL CONVENTION.

THE first session of the third Annual Convention of the Association opened in the School of Practical Science, Queen's Park, Toronto, at 2:30 o'clock on Tuesday, the 17th inst., the President, Mr. W. G. Storm, in the chair.

The following members were present: F. J. Rastrick, S. H. Townsend, E. Burke, D. B. Dick, H. B. Gordon, Grant Helliwell, R. W. Gambier-Bousfield, S. G. Curry, John E. Belcher, Henry Langley, E. B. Jarvis, W. A. Edwards, G. F. W. Price, W. A. Langton, R. C. Windeyer, sr., R. C. Windeyer, jr., J. Wilson Gray, Thos. Kennedy, M. B. Aylsworth, W. L. Symons, G. W. Gouinlock, R. J. Edwards, G. R. Harper, Wm. R. Gregg, Mark Hall, M. Willmot, W. G. Storm, E. A. Whitehead, A. L. Ogilvie, R. Ogilvie, J. Balfour, W. R. Billings, J. L. Wilson, A. F. Wickson, G. W. King, J. W. Power, J. M. Moore, J. A. Fowler, F. C. Law, John Kay, Frank Darling, Wilm. Knox, William Bunney, A. E. Paull, C. F. Wagner, J. Henry, Jas. Smith, L. M. Bowman, J. A. Ellis, H. Simpson, S. J. Peters.

The Registrar, Mr. S. H. Townsend, read the minutes of last meeting, which were approved, with the incorporation (suggested by Mr. Gordon) of the text of draft bill as discussed at last meeting.

PRESIDENT'S ADDRESS.

GENTLEMEN,—In opening the proceedings of this third annual convention of the architects of Ontario, it is my pleasing duty to thank my fellow architects for the honor they have done me in granting this privilege, and especially because they have done this for so many times in succession.

On behalf of the architects of the city of Toronto, I have much pleasure in extending a most hearty welcome to our visitors from other parts of the Province. It is our earnest desire to make our Association provincial in the largest and best sense of that term, and I feel confident that we will all be found working together with that end in view.

It gives me the liveliest satisfaction to be able to congratulate the architects of the Province on the success which has so far attended our efforts to promote professional and public interests by co-operation. And it may not be out of place just here to go back to the inception of our scheme for the formation of a professional association, and briefly outline its history from the very beginning.

A little over three years ago a few architects in this city met in the office of one of their number to discuss the project of forming a club or league, with a view to holding periodical meetings for the discussion of matters of common interest. They resolved to hold an adjourned meeting, to which others should be invited, and to dine together at the Rossin House as a means of promoting social intercourse. At that meeting, held on the 13th of October, 1887, was organized the "Architects' Guild" of Toronto.

The success of this city association during the years 1887-88 suggested to its members the feasibility of a provincial association, and a committee was appointed to look into the matter and take the necessary preliminary steps for the calling of a convention. It is unnecessary that I should dwell on the success of that experiment. The convention was held at the Queen's Hotel on the 21st of March, 1889, and the outcome was the formation of the provincial association and the adoption of a constitution. In November of the same year, a meeting of the new association was held for two days, and with it a very successful exhibition of architectural drawings. At this meeting the draft of an Act to incorporate the Society was approved of, and the Board of Directors were instructed to submit it to the Ontario Legislature and push it to a successful issue as speedily as possible.

This measure has as strong a basis in public utility as have any similar measures previously passed to incorporate other callings. The Law Society of Upper Canada is now a very venerable body, with a long, continuous and respectable career. The medical professions are incorporated as the Ontario College of Physicians and Surgeons, with its tariff of fees and tests of admission to the profession. The Provincial Land Surveyors are a very respectable and influential guild. Are not the architects equally a guild and equally respectable and influential? So at least thought the promoters of the measure. I might have added the dentists and druggists if it had been necessary to enforce my plea of justification.

The Legislature looked on our measure as a reasonable one. The Government framed the Act of Incorporation, introduced and passed it through its several stages as a Government measure. It received the Royal assent on the 7th of April, 1890, and was proclaimed in the *Gazette* on the following 25th of July. The first meeting of the Council of the Association under the Statute was held on the 6th of August last, and since then that body has not been idle. The By-laws for the government of the Association, the laws and regulations for directing the education of students and for the conduct of all examinations, are the result of their labors.

It is interesting to compare our rate of progress in this matter with that of our brethren in the Mother Country. There they have been talking of incorporation for upwards of thirty years, and have so far only reached the stage of framing a bill for submission to the House of Commons. The architects of Ontario, so far as I know, are the first in any country to secure legislative incorporation.

Some explanation may be due to members regarding the change of time in calling the convention. The Council have, under the Act of Incorporation, the right to determine the time of meeting. We had the matter fully discussed, and it was the unanimous opinion of the whole Council that the early part of the year was the most convenient time for the profession generally. If this view commends itself to the Association this will continue for the future to be the regular time of meeting in annual convention and for the election of members of Council in the place of those who retire from office.

It is now my melancholy duty to remind you of the death of one of our most prominent members, the late Geo. F. Durand, of London. Mr. Durand stood deservedly high in his profession, and also with the general public in his own city. He took from the first a very active interest in the movement which resulted in the incorporation of this Association, and was President of our first Provincial Convention, and Vice-President until his death of the Association which was organized at that meeting. He took an active and useful part in the preparation of the draft Act of Incorporation, but did not live to see it even introduced into the Legislature. For myself, and I trust I may say for my fellow members, I take this opportunity of placing on record our deep sense of the great loss sustained by this Association and by the profession at large, in the death of one who was cut off in the very prime of life and apparently with a long, honorable and useful career before him.

The Association has also to mourn the loss of another member in the person of the late Joseph Kilburn, of Stratford, who died in the early part of the present year.

Permit me in closing to offer a few words of advice to my fellow members. We have a noble and honorable calling. On one side it is closely allied to or rather is a department of Art, which is the embodiment of the beautiful; on another side it is equally a department of Science, which is the co-operation of observed facts and phenomena under general laws or principles. It is our function on the one hand to promote the erection of beautiful as distinguished from unsightly buildings; it is equally our function on the other hand to see that the buildings put up are structurally secure and safeguarded from a sanitary point of view. On each side of our work it is capable of indefinite future development, and on each side it has an historical development. Every member of the Association who honors his calling and participates in its spirit should seek to equip himself for his work by careful preparation, and should keep his faculties on the alert for the reception of new ideas, both artistic and scientific. Fortunately for us it is possible to combine the useful and the beautiful often to the maximum extent of each, in the same structure, and to do this should be the conscientious aim and persistent effort of all.

To the younger members of our profession especially I appeal. Those of us who are older must soon pass away leaving to you the care which we now exercise over our common interests. Make up your minds to look more closely and successfully after those interests than we have been able to do, and above all things try to keep up a high corporate standard, by keeping the individual standard high. Do good work each in his own sphere.

Respect yourselves and each other's honor. A law of incorporation can do little for you if you do not carry on your work in this spirit.

> This above all—"To thine own self be true,
> And it must follow as the night the day,
> Thou can'st not then be false to any man."

The reading of the address was received with applause.

Mr. D. B. Dick, Treasurer, said that as this was the first meeting of the incorporated Association, he had no set statement, except to acknowledge receipt of $2003.30 from the Registrar, which will appear in his statement. The details of the rest will be accounted for by him.

The Registrar presented the following report:

INCOME.		
145 Architects' registration fees @ $15		$2175 00
76 registration fees of existing students @ $1		76 00
73 articles of indenture registered @ $1		73 00
3 Students' registration fees @ $5		15 00
Interest on Registrar's balance		6 33
EXPENDITURE.		
Directors' expenses	$140 00	
Registrar's salary	108 00	
Postage, stationary, books, etc	25 90	
Printing, advertising, etc	33 35	
Rent of room for meetings	19 00	
Fees returned to Mr. Raby	13 00	
Collections on cheques	50	
	$ 330 75	
Balance in hands of Treasurer	2003 33	
Balance in hands of Registrar	11 25	
	$2345 33	$2345 33

145 have applied to be registered as Architects; one of these subsequently withdrew his application and registered as a Student; one has since died, and three of the applications recorded are now awaiting the decision of the the Council; so there are now 140 names in good standing upon the books of the Association; of these, 70, or exactly half, hail from Toronto; Ottawa claims 18, or about one-quarter of the balance; Hamilton, 11; London, 6; Kingston, 5; St. Thomas, 3; Brockville, Chatham, Peterboro and Woodstock, 2 each; while Almonte, Barrie, Bowmanville, Deseronto, Port Elgin, Guelph, Lindsay, Napanee, Paris, Pembroke, Owen Sound, St. Catharines, Meaford, Ridgetown, Warkworth, Whitby, Windsor and Stratford, have to get along with one apiece.

Seventy-six students have taken advantage of the proviso in Sec. 24 of the Act and applied for registration as existing students, and three have applied applied for permission to be articled for a five year course. At this morning's meeting of the Council these three have been accepted.

Three meetings of the full Council have been held, and six meetings of the Toronto Committee of the Council. This Committee has prepared the draft By-laws, which will be laid before you, before the Convention closes, and a draft of rules and regulations of the Council that will in all probability be put into proper shape for publication at the next Council meeting. It has also prepared a form of indenture for the use of those members of the Association who wish to take pupils into their offices.

Much work has also been done towards the preparation of the regulations to govern the examination and enrolment of students, by both the Toronto and Ottawa Committees, and I think the work is now so far advanced that the Council will be in a position to issue all the necessary rules and regulations at an early date.

I have had a good deal of correspondence with the promoters of registration measures in England, and in the Province of Quebec, in both of which places this movement is rapidly gaining ground, and I have been asked by my correspondents to lay two or three of these letters before you.

The first was written in January, 1890, at the time our Act was before the Legislature, and shortly after the receipt of the resolution passed at our last Convention. It was as follows:

12 Carleton Chambers, Regent Street, S. W.,
LONDON, 9th January, 1890.

Registration of Architects.

MY DEAR SIR,—Please convey from me, to the Ontario Association of Architects, my sincere thanks for the very kind resolution passed at their annual Convention. Such fraternal sympathy is a great encouragement to me to persevere in my efforts. In the mother country, I am sorry to say, I meet with much opposition, though the number of supporters of the measure is year by year greatly increasing. I heartily congratulate you upon the success which has attended your efforts, and trust that your Bill will pass without opposition. I take it for granted that you are fully aware of the efforts being made to attain the same object in France, Australia and the United States. Believe me, my dear sir,

Yours fraternally,
HUGH ROUMIEU GOUGH.

S. Hamilton Townsend, Esq., Sec. O. A. A., Toronto, Canada.

Mr. Gough is the late President of the Society of Architects.

The second is dated May 29th, about a month after the passage of our Act:

The Architects' and Engineers' Registration Act Committee,
39 KING ST., CHEAPSIDE, E.C., LONDON, May 29th, 1890.

DEAR SIR,—I am desired by my committee to inform you that at the last meeting held at St. James Hall, Piccadilly, London, a resolution was unanimously passed congratulating the architects of Ontario upon the recent passing of the Architects' Registration Bill for that Province, and I shall be much obliged if you will kindly make this known to the promoters of the measure. I would also deem it a favor if you can supply me with a copy of your Act, as we architects in England naturally take a great interest in the movement brought to such a successful issue in your country.

I am, dear sir, Yours truly,
EDGAR FARMAN,
Hon. Sec'y.

S. H. Townsend, Esq.,
53 King St. East, Toronto, Canada.

The third is from Mr. Clift, of Montreal, the Secretary of the Quebec Association, and was written a few days after their late convention:

1724 Notre Dame Street,
MONTREAL, Oct. 15th, 1890.

S. H. Townsend, Esq.,
Sec. Ontario Association of Architects.

DEAR SIR,—It gives me pleasure to inform you, that it was moved, seconded, and carried unanimously, at the first annual meeting of our association, held on the 10th and 11th inst., "That the thanks of our association be tendered to the Province of Ontario Association and yourself, for the kind assistance you have given us in the formation of our association." So you will please accept our warmest thanks for those kind services, and it gives me great pleasure to state that our first annual meeting was a complete success in every way.

Believe me, dear sir,
Yours very sincerely,
C. CLIFT,
Sec. Province of Quebec Association of Architects.

The President: I think if anything was wanting to warrant the action we have taken, it is the unanimous call for registration throughout the Province. Nearly every architect, I think, is enrolled on our rolls; and the three letters you have heard from members of the profession in the old country are also significant.

Mr. Gambier-Bousfield: Was a copy of the Act sent to those gentlemen asking for it? or was a copy of the draft we got up sent? Because if they only saw the Act as it was passed they would think we were a very inferior lot of architects.

The Registrar: I may say that the correspondence with the English promoters was very full. They have not only had copies of all our proposed changes, but there have been several suggestions made by them, which have been discussed in connection with our Act.

Mr. Curry: The Registrar's report says the Quebec architects have applied for incorporation. I think it should go further and say that they have obtained an Act of Incorporation.

The Registrar: My report said "the movement was gaining ground."

Mr. Curry: The fact is, they have an Act of Incorporation, such as it is. I have looked over it.

The President: In Quebec?

Mr. Curry: Certainly. Passed by the last Legislature. I have the Act. I did not read it over closely.

A member: It is about as good as our Act.

Mr. Curry: Just about, I think. It is as good as ours, I think, as far as I could see.

The Registrar: I will accept the amendment.

The President: With that amendation will you adopt the report?

The report was then adopted.

CERTIFICATES AND COMPETITIONS.

The President: The next business is anything arising out of the minutes or reports.

Mr. Gordon: There were two Committees appointed—one in regard to competitions, and another one on certificates.

The Registrar: I have not had reports from either of those Committees. The whole energy of the members of the Council has been directed towards the preparation of by-laws, and getting the Act into working order.

Mr. Cumbier-Bousfield: Will these matters be carried over till next year, or will it be necessary to move that we take the matter up again?

The President: I think it would be necessary to move another resolution.

Mr. Gambier-Bousfield: I would move: "That the Council be requested to take up the matter of certificates, with the object of drawing up a certificate suitable to the requirements of the architects of this Association." One of the reasons why this matter was brought up was that there was so much dispute about the responsibility upon architects in issuing these certificates; and it was suggested that the Council should get up a form for us; and I think last year some instances were given of certificate issued in the States by some of the leading firms of architects—some of which contain a clause which states that they will not be held responsible at all for the certificate for the work done, or the quality, or its value, or its endurance.

Mr. Gordon: I second the motion.

The President: I can corrobate the Registrar's remark to the effect that the whole energies of the Council have been given to getting the Association in working order, and getting our by-laws, rules and regulations and everything of that kind in proper shape; and we overlooked this matter, so it will have to be referred again to us. The original resolution reads: "That the new Council be requested to consider a model form of certificate, and the issue of the same to members of the Association." It was moved by Mr. Gambier-Bousfield, seconded by Mr. Gordon. What is your mind regarding this new motion?

Mr. Curry: I think the matter should be discussed. I think when a motion is made the mover and seconder should give some reasons for bringing it forward, and that the matter should be discussed so that the Council should know the views of the Convention, and should get suggestions. (Applause).

Mr. Aylsworth: Would it not be well for the Council—without spending too much time—to issue a form and send to each member of the Association, then wait for their criticism or suggestions before making it final?

Mr. Edwards: I don't see the object of the resolution. There are certain responsibilities which an architect cannot avoid. I fail to see the point that is to be attained.

Mr. Gambier-Bousfield: The reason I did not say more about this matter was that I thought it was discussed last year. The great question to-day is as to the value of an architect's certificate—what value is it? Some contractors deposit such certificates in their banks, and then the banks collect from the

proprietor, who is thus bound to pay the bank—he cannot help it ; then of course he can take action against the contractor and dispute the certificate. According to the decisions of different courts, a certificate ought not to be used as a draft and deposited. Another point is as to whether the proprietor is bound to pay the contractor the amount certified to ; and especially if it is a final certificate. The courts have generally decided that it entirely rests upon the wording of the contract. If the contract says that the architect is the sole arbitrator in the matter, then the certificate which he gives cannot be disputed ; at the same time the proprietor has a remedy at law, and he can—and in many cases has—recovered from the architect whatever was wrong in the certificate ; because very often there are matters that an architect cannot certify to. There may be matters, especially on alterations, in which the proprietor is about the house all the time, and which it is very awkward for the architect to find out. Besides, we are not clerks of works, and we do not propose to spend so much time on buildings as would enable us to see everything that goes on—we can only have a general idea. Then if the clause about the architect being sole arbitrator is left out of the contract the proprietor is not bound to pay, and the contractor can go to law with him. The American architects I have alluded to go so far as to stamp on their certificates that they will not be held responsible for the certificate. Then the question comes : of what value is that certificate? They say they won't be responsible for the value of the work done. Is that certificate of any value at all if the proprietor has to pay it and take his own chances? Of course, if he has employed a clerk of works he has probably got all that he has to pay for, and that clause in the certificate simply throws the onus on the proprietor ; so that you see there are a great many questions to be considered in this matter, and that is why it was brought up last year.

Mr. Edwards : From what Mr. Bousfield has said I gather that it is not so much the certificate as the contract under which the certificate is given. It would be well, then, to discuss the matter of the articles of agreement before you go on to the certificate.

Mr. Rastrick : This is an important question, which I think you will not decide without consultation with some eminent lawyer. The judges do not hold a certificate in any way valid for the collection of money in which mistakes occur, because they hold the architect is only a party to it and consequently could not give a certificate, as he made himself so much of a party that he specifies in his contract that he is sole judge and arbitrator of whether he has done right or wrong. Now, that alone would nullify or stultify his power of giving a certificate. Let these matters be discussed with a lawyer equitably, and let us arrive at a basis that this Association can carry out and recommend to our members. I have had to sign certificates when I knew that the man had not done the work up to his contract. You may say I was wrong in doing it ; but very few architects can resist the pressure both of the contractor and of the employer, who want the certificate issued. I think it would be well to let this matter rest until we can fulminate certain things which apparently are not to be got at at present. There is the matter of the judges' decisions, these should be collected for reference, and this can only be done by waiting.

Mr. Gordon : The great point we are interested in, and the question we want to have solved, is our responsibility in signing a certificate for work. I think there are many points that may be carefully guarded in a certificate with the assistance of legal advice in the phraseology, and with our practical knowledge to assist the lawyer in so framing it ; and there are many points which by our careless or thoughtless method of framing our certificate, leave us open, if the proprietor be a dishonest man to him taking action against us. Dealing, as we very often are, with scores of contractors—some of whom of course may be dishonest men—(laughter), and being unable to give that personal supervision to every minute detail, it is impossible for us to assume the large responsibility which some men seem to think we should. They seem to think we ought to assume the responsibility of a chief contractor, and that if, within months afterwards, anything should go wrong, we must be held responsible for every little minute detail which the scamping of one of the contractors has entailed. While I don't want—and I don't think any gentleman here wants—to escape any responsibility which we can reasonably be expected to assume, we do want to be guarded against the absurd claims of unreasonable clients holding us responsible for all the misdeeds of the contractors whom they happen to employ. (Hear, hear.)

Mr. Rastrick : I might add that by law—and equity too—the architect is not held responsible in any particular, except as the agent ; therefore any action brought against him can only be brought as agent, and you would find that that would not stand in any court. That I know from experience ; I speak from having the matter decided in courts—not in this country, but in England.

Mr. Gambier-Bousfield : That makes all the difference as to whether it was in England or this country.

Mr. Rastrick : The law is administered in this country just the same as in Great Britain ; and they generally quote the English precedents in our courts here.

Mr. Langley : I think this matter simply resolves itself into the question whether the architect should not always have a contract with the proprietor. (Laughter.) We have our schedule of rates and our conditions printed ; and if we had our contract, properly framed, &c., we could secure ourselves. (Hear, hear.) I cannot conceive of any certificate being sufficiently ample to cover the whole ground so as to guard an architect unless he has a thorough contract with the proprietor. (Hear, hear.) I think it would be waste time.

The President : Mr. Dick, what is your view on the matter?

Mr. D. B. Dick : I cannot say that I see the necessity for any uniform form of certificate. I have always used the same form, and I never found any difficulty arise from it. It simply states that So-and-So is entitled to receive so much money on account of his contract for such and such a work. At the bottom is a receipt form which he signs when he receives the money. I don't think that a certificate is looked upon as a form that can be deposited in a bank and drawn upon.

(A voice—"Well, they do it.")

I know they do it sometimes, but I don't think they are legally entitled to do it, and I don't think any cautious banker would advance money on it. As to the contractor suing upon a certificate or the proprietor being obliged to pay it, I think that a man employs an architect as some one in whom he has confidence, and as a general rule he will pay his certificates without question; but we find occasionally in a final certificate, when a considerable sum for extras is included, that the proprietor will ask the contractor to hold it over till he sees the architect. There is nothing unreasonable in that. I don't think any kind of a certificate that can be drawn will take the place of a good form of contract between proprietor and contractor. The certificate should be left as simple as possible. As to holding the architect responsible for the delinquencies of the contractor, a very nice point might arise. The contractor completes his work, and is entitled to so much money ; but if you had let the work to some other contractor he might have been entitled to a good deal more money—because I suppose all of you know from experience that the work of one contractor is by no means of equal value, in most cases, with the work of another, even without going so far as our friend, Mr. Gordon, and saying that of nineteen or twenty contractors some of them must be dishonest.

Mr. Gordon : I said scores ; I did not say nineteen or twenty. (Laughter.)

Mr. Dick : Even call it hundreds ; I don't think there is any absolute necessity for any of them being dishonest. (Laughter). However, the question still remains as to the absolute value of the work done. It is simply a contract to do so much work for so much money ; one man will do it better than another, and it is just for the architect to use his judgment whether he will certify that the work has been done as well as the contractor could reasonably be expected to do it, while he knows very well that another contractor at the same price would have given you better value for the money. I think going into all these matters is unnecessary refinement. I think a certificate is simply a statement by an architect that he considers the contractor is entitled to so much money for work done.

Registrar Townsend : A case was submitted to me a short time ago for an opinion, and I found on looking into the decision of the courts that the responsibility we assume in connection with certificates rests almost entirely with ourselves. If in our contracts between builders and proprietor we insert a clause stating that we are to be the judge or final arbitrator in all points, then the responsibility of the contractor to complete his work, or his failure to comply with the contract, is transferred to ours houlders ; and a certificate that the work is done makes us responsible to the proprietor, and in numbers of cases the proprietor has collected from the architect on that clause ; but in every case in which that clause was omitted, the builder was held solely and wholly liable for all loss, and the certificate of the architect was only taken as evidence as to the quantity and quality of the work done.

Mr. Curry : Who is to settle as to the work? I think this question can be solved very easily, in a sense. It is only a question of the present form of certificate, which reads : "I hereby certify that a certain party is entitled to a certain amount of money for doing certain things." If that was changed thus : "I hereby certify to the best of my knowledge and belief that So-and So"—you would get over the whole thing (laughter), because that is practically what it all means. It is to the best of your knowledge and belief ; and your client must judge as to whether you have any knowledge in the matter, or whether your knowledge is worth anything. (Laughter). If he does not believe in your knowledge, I suppose he would not employ you ; but the only question raised was that the certificate was a little too stiff—"I hereby certify that, etc." The thing is very definite and very positive : and a man might certify to a thing that was not true, through not being on the work, or some defect that might arise afterwards. As to Mr. Townsend's clause, I don't quite understand it. I don't know whether the clause says that the architect is to be sole arbitrator, or whether the work is to be done to his satisfaction. It has got to be done to somebody's satisfaction, and it is not likely that the proprietor would consent to its being done to the contractor's satisfaction, or that the contractor would agree to the proprietor being the judge.

Mr. Rastrick : Up west contractors will not agree to a contract when it is left open to the sole arbitration of the architect.

Mr. Langley : Where it is a question of extras, there is a provision for the appointment of arbitrators ; but under the model contract the architect is made sole arbitrator.

Mr. Gordon : As long as the building is under progress the architect is the sole arbitrator ; but in any matter of final adjustment, whether it be in relation to the contract or quality of work or extras, or anything of that sort, then of course there is recourse to arbitration.

Mr. Langley : You will find it is only on the matter of extras or charges.

Mr. Townsend : In reply to Mr. Curry I may say, that the clause on which the decisions I mentioned are based is the clause so common in Old Country contracts—that all matters in dispute between contractor and proprietor shall be settled by the architect. I understand that clause in most of the contracts in Canada is omitted ; but it is still very largely in use in England, and it is of course English decisions that we have before us. There are very few Canadian decisions upon this point.

Mr. Langton : In all contracts there is a clause signifying in what way the contractor gets his money, by certificate from the architect ; and usually, in my case, it is there that the guarding of the nature of the certificate is inserted. It is always possible in a contract to say all that is necessary about the value of a certificate between the owner and the architect ; and then the certificate itself would be kept as simple as possible. (Hear, hear.)

Mr. Gregg : In a discussion in the American Association one of the leading American architects—I think it was Preston—said he did the very thing that Mr. Curry suggested, and it was followed by an audible smile. (Laughter.) He said he always put in a clause, "to the best of my knowledge ;" and another architect—that I myself have worked with in Montreal—in giving a final certificate invariably before signing put in the letters "E. and O. E."—"errors and omissions excepted." (Great laughter.) Now, I think just that simple guarding of the final certificate is sufficient. (Renewed laughter.)

Mr. Gouinlock : I think the contract covers it nicely, saying that the architect shall be arbitrator and his decision shall be final ; and I think that contract was drawn up by the architects and builders mutually, and I don't think the certificate has anything to do with it at all. This is a matter of contract, not certificate.

The President : I am very glad to have heard the discussion. I don't think it is a matter that we can definitely decide upon in this Convention, or even by the Council. I have had some years' experience as an architect, and I have never found any difficulty about a certificate in any shape ; and I have always had that clause making myself the sole arbitrator of all matters in dispute between proprietor and contractor ; and I will refuse—and have over and over again refused—to have any other contract. The only one I remember which was drawn up differently was the University contract, where the late John Worthington was contractor ; and he was rather suspicious of us being hard upon him, and he had an arbitration clause put in, which was consented to by the Council of that day. At the first issuing of certificates, where we had some extras to allow him for, he claimed his arbitration clause, and the late Mr. Sheard was the arbitrator, and he only allowed him about two-thirds of what we were willing to allow him ; so that after that he did not claim his arbitration clause at all, and we went on very comfortably. (Laughter). I don't think any of these suggestions that have been made by the members are favorable to us as a profession. If we undertake a certain duty, and we have certain responsibilities, we should shoulder them fairly and properly. If we issue a certificate it should show on its face what it is worth. It is as much as to say : "I am satisfied that the work has been done so far, and that man is entitled to so much money." Take that responsibility, and hold it, and stand by it. (Hear, hear.) Don't try to get out of it by any underhand way of saying, "So far as my knowledge," or "So far as I know," or any subterfuge of that kind at all—(Applause)—and when the work is finished and the contract is closed, shoulder the responsibility and say : "I am satisfied with that building," and give the man his certificate. (Hear, hear, and applause). These are the principles I have worked upon for upwards of thirty years, and I have never found any difficulty arise.

The President read the resolution, and was about to put it, when—

Reg. Townsend said : I would like to move an amendment, that instead of putting this matter into the hands of the Council to deal with, a committee of the Association be named, who shall prepare suggestions as to what both contract and certificate should include, and submit this draft to the next meeting of the Convention. The Council has more than it can attend to for the coming year, and if this motion is passed I am afraid it would be left over to be brought up again at the next Convention.

Mr. Langley : I think the meeting does not want it at all. (Laughter).

Mr. Gregg : I think that motion is out of order. Bringing in a contract opens up an entirely new question.

The President : I thought the question was up at the last Convention, and I did not want to burk the discussion, because it is a question that some members think is a serious one ; I don't think so at all myself. (Hear, hear).

Mr. Townsend withdrew his amendment.

The main motion was put and lost.

COMPETITIONS.

Mr. W. A. Edwards moved, seconded by E. B. Jarvis, "That a Committee be appointed to prepare conditions of competitions that shall be acceptable to this Association."

Mr. Gouinlock : I understood there was a Committee appointed at the last Convention to do this. I would like to hear from them.

Mr. Gambier-Bousfield : The Council have not been doing their work. The work has to be done over again. We would like to know something about it.

The President : The Registrar and myself have explained that our duties in the Council have been so onerous that we have not been able to do anything in the matter, and we asked that the Committee be appointed again, and this is the result—this resolution.

Mr. Curry : It is all well enough to appoint Committees, but I think the Council should do this work, as it is a responsible body. I think the task of drawing up a set of conditions that will be satisfactory to the members is one that a Committee cannot carry out. What we need is some understanding as to what is to be done about competitions. The Council cannot bind members, and some members will not be bound by themselves or anybody else in this matter. Let us discuss the question and ascertain what the majority of members would be willing to do ; because as long as ninety-five say they will not enter any form of competition, we are going to have the same trouble over again. (Hear, hear).

Mr. Edwards : I might suggest that Mr. Curry move an amendment that this order of business be laid over, as this is the order arising out of the minutes.

Mr. Curry : I will take that suggestion and move that the resolution be considered to-morrow, under the head of "Special business brought up by individual members."

This motion was seconded by Mr. Burke and adopted.

HOT WATER HEATING IN THE DOMINION PUBLIC BUILDINGS DURING THE PAST TEN YEARS.

This was the subject of an elaborate and well-considered paper by Messrs. Ewart and Billings, of Ottawa. Mr. Billings read the paper, accompanying the reading with blackboard and other illustrations. It excited a lively discussion. In a later issue of the CANADIAN ARCHITECT AND BUILDER this and other papers, with the discussions thereon, will be published.

Mr. H. C. Gordon, of Toronto, followed with a paper on

BUILDING MATERIALS.

As it was nearly six o'clock by the time the reading of the paper was finished, no discussion was had upon it ; but a motion of thanks was moved by Mr. Gouinlock, seconded by Mr. Wilson.

In replying to the vote of thanks tendered by the President—

Mr. Gordon, said : I thank you for your patience, gentlemen.

The President said that the paper was one that could not be so thoroughly understood in hearing as it would be when published, and the members of the profession would have the pleasure of seeing it in the report of the proceedings and be able to gather more from it then than was possible by hearing it read.

The Convention adjourned at six o'clock.

SECOND DAY.

THE BY-LAWS

The President : Gentlemen, our first business is the discussion upon the By-laws, copies of which have been distributed among you. These are the By-laws governing the Association generally as far as it affects individual members. The other By-laws are rules and regulations governing the other matters of the Association such as education of students, and examinations, and appointment of officers, and all that comes within the province of the Council. It is their duty to look after these matters. These ten By-laws before you are all that are necessary for the Association to take under consideration at the present time. The other set of By laws have not been thoroughly worked out yet. We have had several meetings and discussions about them. They are pretty nearly completed now ; we will probably have them out in a very short time. I would request the Registrar to read these By-laws. I suppose the better way would be to take them up *seriatim* and discuss them separately.

The Registrar read claus. No. 1

Mr. Gordon : I think the third Tuesday in February is rather late for our annual meeting. It is getting on to the time when we are getting busy. I would move that it be made the first Tuesday.

Mr. Billings : If this By-law is passed it will fix the meeting in Toronto and make it impossible to go anywhere else without having a change of the By-law, which would take some time. If any other city was desirous of having the meeting, and there were a sufficient number of architects to carry such a motion, could it be passed through at one meeting so that the next year it could be held at any other city?

The President : No ; if this By-law carries it will fix the time and place permanently until an alteration in the By-law, which would take the natural course of proposing it at one meeting and not considering it until the following meeting. This was discussed fully in the Council with representatives from almost all parts.

Mr. Billings : This is the only society of the kind that meets only in one place. The Royal Society, dealing with science and

literature, meets in Ottawa, but they have no such hard and fast clause in their By-laws, and they held their last meeting in Montreal. The Royal Academy go about from one city to another. It is not that I wish to stop meeting in Toronto, but would it not be better to state "in such time and place as shall be designated in the notice calling the meeting?"

Mr. Balfour: I beg to move: "That the first clause of the by-laws as submitted be amended to read as follows: 'The Association shall meet on the first Tuesday in February of each year at such time and place as shall be determined by the Council, and designated in the notice calling the meeting.'"

Mr. Billings: I second the motion.

A Member: The notice should be issued earlier. I got mine only twelve days ago.

The Registrar: The by-laws settling the election cover those notices.

Mr. Burke: We are already fixing the time for next annual meeting, and we can begin now to get ready for it. We have notice a year ahead. I am in favor of having it in Toronto all the time, for the reason that we can always here secure a fairly good representation, while, if we go to an outside place we may have a very small Convention.

Mr. Billings: Suppose Hamilton, or some other place, should suddenly become larger? (Hear, hear, and laughter).

Mr. Rastrick: I seriously thought of this matter when that clause was proposed at the Council, and I came to the conclusion that it would not do for our Association to be a travelling menagerie—(Laughter)—because, all travelling Associations end in quarrelling and dissension, more especially when you have the matter of locality to decide. We have here in Toronto all our scientific societies, and even in this building an illustration of the fact that you have not such a building or such prospects of education in any town in this Dominion. There is something to be said about meeting in local places, but there are only a few who belong to this Association in the towns. The chief officers of the Council are resident in Toronto—very justly so. The architects in Toronto are of good standing and position, which entitles them to that respect, and I think the Government was justified in appointing those men. I think we would be doing wrong to alter the by-law.

Mr. Balfour: We will have to hold all our meetings in Toronto according to this by-law.

Mr. Curry: I rise to a point of order; there is no motion before the chair.

The President: What is this I hold in my hand? (Laughter).

Mr. Curry: I beg pardon; I did not know the resolution was before the house.

Mr. Balfour (continuing): These fellows from Toronto want to do all the talking. (Laughter). We are not taking the matter out of the Council's hands by my amendment. Suppose we got an invitation from Ottawa, and the Council thought there would be something there for our benefit. I am sure we would all be benefitted by going through the Langevin Block, and having it shown to us as carefully as our friend Mr. Billings read his paper yesterday.

Mr. Gregg: That is putting the whole control of the meetings in the hands of the Council, and I don't think they want that responsibility.—I move, "That the Association shall meet in the city of Toronto annually, or at such place as may be arranged at a previous meeting, on the second Tuesday in February, at such time and place as shall be designated in the notice calling the meeting." Then if we wish to meet in Ottawa next year, we can pass a motion and it is settled. If no motion is passed we meet in Toronto.

Mr. Paull: I second Mr. Gregg's amendment.

Mr. Gordon: It is quite unnecessary to leave the matter in the loose form which this last amendment does. Far better have the original one, or better still, Mr. Balfour's, leaving the whole matter in the hands of the Council, who would perhaps be in a better position than any others to decide. (Hear, hear). Before six months are over some special attraction may arise in a particular locality which might influence the Council in deciding on another place than Toronto. I don't think we can now decide what the requirements one year hence will be, and could not instruct the Council as to where the meeting should be held.

Mr. Gregg: It is a very common thing in Conventions to decide before closing, where the next meeting is to be held; and it is quite an interesting matter, as, perhaps, two or three places wish a vote taken; and we are taking it out of the hands of the Convention and putting it in the hands of the Council.

Mr. Gregg's amendment was then put and lost.

Mr. Balfour's amendment was carried almost unanimously.

Sections 2, 3, 4, 5, and 6 of the by-laws were adopted without debate.

On No. 7, Mr. Gordon thought it would be awkward to leave the elections till the last day, as sometimes a three day's session would be held, and many members might not be able to remain to the close.

Mr. Balfour: Suppose there is only a one day meeting.

Mr. Gordon: I don't think we ever will have a one-day meeting, because members from a distance cannot get here to the morning session.

The President: The very reason Mr. Gordon gives for changing it was the reason it was adopted. The election would be so interesting that the members would remain over for it. If there was only a session of one day, that would be the "last day" according to the by-laws; in a two-day's session, the second would be the "last," and so on. The clause was adopted, and also Nos. 8, 9, and 10, and then they were all adopted with the amendment to the first one.

The President: Our official stenographer remarks that the Council who drafted these by-laws must be composed of unusually wise and clear-headed men, when they were adopted with so few changes and so little debate. (Laughter).

The by-laws as adopted are as follows:

1. The Association shall meet on the first Tuesday in February of each year at such time and place as shall be determined by the Council designated in the notice calling the meeting.

2. Any person being a British subject who has for ten years been practising the profession of Architecture and residing within this Province, and is, at the time of his nomination, a member in good standing of this Association, shall be eligible for election as a member of the Council.

3. Nominations to membership of the Council shall be in writing upon blanks to be mailed by the Registrar to each member at least two months before the annual meeting, and must be returned and in the hands of the Registrar at least one month before the date of the said meeting.

4. Each member in good standing is entitled to nominate and vote for as many candidates for election to the Council as there are vacancies to be filled.

5. After the nominations are closed, an alphabetical printed list of all nominations made will be forwarded to each member of the Association at least two weeks before the date of the annual meeting.

6. The nomination blanks shall state the date upon which the nominations will close, and list of nominations shall state the date at which and the place where the annual meeting will be held.

7. The election to membership in the Council shall be by ballot, and shall be held upon the last day of the annual meeting of the Association.

8. There shall be paid to each member of the Council for attendance at each meeting of the Council, his actual and necessary travelling and hotel expenses.

9. A special meeting of the Association shall be called by the Registrar upon the requisition of the Council or of twenty-five members of the Association in good standing. The requisition shall state the time, place, and object of such meeting; and a copy of the requisition shall be sent to each member, with the notice calling the meeting, at least ten days beforehand. No business shall be transacted at any special meeting other than that mentioned upon the notice paper.

10. At each annual meeting of the Association, two Auditors, not members of the Council, shall be elected. They shall have access at all reasonable times to the books, accounts and securities of the Association, and shall report thereon at the next annual meeting. In the event of death or resignation of an Auditor, the vacancy shall be filled by the Council.

WEATHERING OF BUILDING STONE.

Mr. Allan Macdougall read a valuable paper on this subject, the discussion of which took a tangible form in the following resolution which was unanimously adopted.

Moved by Mr. Curry, seconded by Mr. Dick, "That it be an instruction of this Convention to the Council that they shall take such action as they may deem best to determine the quality and value of the building stones which are being used in this Province."

SLOW BURNING CONSTRUCTION.

Mr. Edmund Burke's paper on this subject was illustrated by printed diagrams distributed among the members. At its conclusion

The President said: I am sure we are very much indebted to Mr. Burke for bringing this matter up in the manner that he has done. It is one that is becoming more and more interesting to us as building operations are proceeding—the idea of approaching as near as possible to fire-proof buildings. Absolutely fire-proof buildings are very expensive, and we cannot always attain to that standard; but we are getting as near to it as we can, and we are indebted to Mr. Burke for his suggestions.

Mr. Belcher: I have great pleasure in moving a vote of thanks to Mr. Burke for his paper, and particularly for the manner in which he has got it up, so that we can have time at our leisure to study and read it over.

Mr. Rastrick: I have very great pleasure in seconding it. I think it is a very timely and practical paper—one that younger members of the Association can well take note of.

The motion was carried heartily, and

The President said: Mr. Burke, I have great pleasure in tendering you the thanks of this Convention for the paper, for it is a subject that has at present more interest, I think, than almost any other subject in connection with building. (Hear, hear).

Mr. Burke acknowledged the vote of thanks.

CONDITIONS FOR COMPETITIONS.

The President: This resolution was introduced yesterday, and was left over till now: "Moved by Mr. Edwards, seconded by Mr. Jarvis, that a Committee be appointed to prepare conditions of competition that shall be acceptable to this Association." What is your pleasure in reference to it?

Mr. Gambier-Bousfield: We have not heard the views and reasons of the mover and seconder. The mover is not here, but the seconder can surely take the responsibility.

Mr. Jarvis: The idea was that as yet we have no rules to tell us why we should not go into certain competitions. We are merely informed by a letter from the Council that we shan't go into competition.

Mr. Curry: Excuse me; I think we should be very careful about the way we word our statements. There has not been anything said by the Council to the effect that we "shan't" do anything. It is simply that certain things have been decided by the Council, and you are requested to carry them out.

Mr. Jarvis: It is understood that if you go into competition when the Council directs you not to, you get into bad favor with every one; and I think it is only right that we should have certain rules for competition that should be followed by every one; and this is merely a proposition that a Committee look into the matter and draw up a resolution that should be put before the whole Association and have it voted upon.

Mr. Gouinlock: I quite agree with the proposer and seconder that this is a very important matter, and one that should be taken up by the Association. But I understood there was a Committee appointed for this purpose last year, and I should like to hear from them. (Laughter). There is no use in appointing Committees if they are not going to attend to their work.

Mr. Curry: There seems to be rather a misunderstanding about this question. I read a paper last year on "Competitions," and as a result somebody moved that the Council should take the matter up and formulate a scheme for a competition. I don't remember the motion being made; no doubt it was made, but up to yesterday morning I did not know there was any such motion made. I suppose that is the position of other members of the Council on that question. You must remember the Council had a very large amount of very special business during the past year, and largely on that account, if on no other, the thing has been neglected. Another thing, the Council is not in a position to dictate what members shall do. They are only in a position to lay down rules as far as necessary, and the fewer the better. We should try to arrive at something like a harmonious opinion as to what the members themselves think they should do, and whatever we agree to should be the the views of the majority, so that those who don't agree will be few, and there will be sufficient numbers in the Convention to speak rather unfavorably of their action, so that they may see it is not proper. Competitions are instituted with the object of securing superior designs, generally by those who know nothing whatever as to how they should be conducted. The result is that a lot of inferior designs are received, and possibly the best, or second or third best of them is carried out. Now, conditions should be so worded that any architect who respects himself and his profession will enter; but generally the contrary is the case. The Council should deal with this matter, because they have authority to carry out their decisions. After all, while there is a great deal to be said against competitions, there are some things in their favor. They afford opportunities for bringing young men of ability into prominence. It is much better for a young man to win a competition than to spend his time log-rolling and hunting around for work by all manner of trickery—which I am sorry to say is only too prevalent; and a man who wins his place deserves it. One of the points to be considered is the question of experts. One expert is not satisfactory in many cases; no matter how sincere he may be, it is almost impossible that he should be fair, there are so many points brought up and so many different ways of looking at a thing. An expert in construction will consider plans from this point of view, and an artistic man will perhaps neglect to look into construction at all. I think there should be three experts, so as to balance up and have as nearly a correct and fair test as possible. I think three would do better than five. It would be a benefit not only to us but to proprietors to have the competitions under the management of the Association. It is to our interest to have the very best designs built. Buildings which are made from second-rate or third-rate plans are not a fair statement of our professional ability. As matters are now, the best men invariably remain out of competitions. Our interests are really identical with those of the proprietors; we all want the best designs, and I think it would be possible to secure a set of fair conditions.

The President: Is it your pleasure that a resolution of this kind be adopted, or that the matter be left in the hands of the Council, to be taken up at their leisure, and to prepare a set of model conditions for the next Convention?

The President: Is it your pleasure that a resolution of this kind be adopted, or that the matter be left in the hands of the Council, to be taken up at their leisure, and to prepare a set of model conditions for the next Convention?

Mr. Gouinlock: If the Council are not overburdened with work I think that would be acceptable. This is a matter that ought to be attended to very soon. There were a number of competitions last year, and we received notice not to compete—with all of which I complied.

Mr. Gambier-Bousfield: The conditions of these competitions would prevent any man who respects himself and his profession from going into them—such, for instance, as the recent Montreal Board of Trade one. I suppose the majority of us had decided, before we got our notice, not to go into it. Twenty-six Canadian architects have gone into it, but not one member of this or the Quebec Association. (A voice—"Are you sure of that?") It is suggested that some who have gone in are members of this Association. If so, I can only say I am very sorry for them; but I think we all know what kind of men those are. It shows how important it is for our Council to keep their eyes open to this sort of thing. That motion brought up by Mr. Curry, of showing to the public that it is to their interest that competitions should be arranged on professional rules, is very important; and I think it would be well if that was brought prominently before the notice of the Council.

Mr. Jarvis: I consider that is the very reason why proper conditions should be published and let the public know what would be the best thing for themselves. They often get up conditions among themselves, and it is through their own ignorance that we are not allowed to go into competitions; whereas if they were better informed we might all go in for it and they should be agreeable to accept our conditions.

Mr. Curry: Would this Convention be agreeable to the decision of the Council? (Hear, hear, and applause).

Mr. Burke: I am sure the Council would be very sorry to have the feeling get abroad that they are trying to choke down competitions, and all this sort of thing. The Council have perhaps four or five times the information regarding these competitions that the outside members have. We have corresponded with the instigators of the competitions; and if they have been in the same place, we have gone to see them, and had many meetings with them; and I don't think that any member ought to feel that we are trying to choke down the thing when we send them a notice advising them not to compete. We have weighed the matter from every point of view, and done all we could as a Council to influence those parties to institute a competition in a proper form. (Applause).

Mr. Townsend: There is one strong reason that should weigh with members—that a competition is advertised as open to all architects of the country, and the public get the idea that the competition is between all the architects of the country, whereas in reality an unfair competition is only between the very poorest architects of the oountry, and results very unfavorably upon the profession. For that reason the Council are bound to place as forcibly as possible before the members the objections to any competitions that are offered.

Mr. Balfour: Did you notify the Secretary of the Montreal Board of Trade that the conditions of their competition were not satisfactory to this Association?

Mr. Townsend: We had a large correspondence with them as to the conditions that would be satisfactory to us before we issued the notice.

Mr. Burke: I think if Mr. Balfour had read the CANADIAN ARCHITECT AND BUILDER he would have seen that.

Mr. Langton: The Council issued instructions on the basis of rules that we all agree were not honorable; but if in connection with that we are to take Mr. Curry's doctrine that the advice issued by the Council is not necessarily binding on members, I sooild think it would be better if we had a set of rules to which we all subscribed (hear, hear), for the purpose of this Association is to a large extent vitiated if we do not follow out the advice the Council sends to us. Hear, hear).

Mr. Balfour: We have a Council who can take this matter up and weigh it properly. They will not be worked as hard next year as they have been the last. By all means leave it in the hands of the Council; they have had experience in the matter. I for one have felt that I would not on any consideration enter into competitions that have been offered, on the conditions placed before us; and I think good cause has been shown in the most of them that we have been invited to enter.

Mr. Dick: The Council might prepare draft conditions, send a copy to every member, and have him return them with his remarks and suggestions. The Council can then take the matter up again and complete their work and issue the conditions. If not satisfactory, they can be brought up at the next Convention and dealt with. They might be put into such a shape that they would be satisfactory for this year, and any serious defects could be remedied a year from now.

The President: Do you make a motion to that effect?

Mr. Dick: No; let that be understood.

The President: Is it the pleasure of the Convention that this resolution be withdrawn and that it stand as an instruction to the Council?

"Yes."

The resolution was therefore adopted.

The session then closed.

AFTERNOON SESSION.

The President: Our first business is a paper by Mr. Gambier-Bousfield on

ARCHITECTURAL EDUCATION.

This paper excited quite a discussion as to the draft curriculum which had been discussed in Council.

MEMBERS' TITLES.

Mr. Burke: On the matter of uniformity of designation or title, we have noticed some architects calling themselves one thing, and some another. Now, I think we should as an Association all have the same title on our cards or letter heads—not "R.A.," because that might be construed "Royal Academician"; and we do not want to be considered registered architects just yet. The Council thought it would be best to put on our letter heads "Member (or members) of the Ontario Association of Architects."

Mr. Rastrick: Not the initials?

Mr. Burke: No; in full. The Council thought the members should adopt a uniform plan—not one say "R.A." and another "M.O.A.A."—not initials, but the full title.

Mr. Gambier-Bousfield: There is this to be said about the matter—it brings the Association into prominence, and that is one of the great things we want to do. We want to show that it is a live, active body, and the more we can bring it before the public, the better our interests will be served.

The President: That is a very good point of Mr. Burke's.

You will all understand that ; and it is distinctly requested and understood that we don't use initials, but the words in full.—"Member of the Ontario Association of Architects."

Mr. Henry : Could a person be prosecuted for using the term "Member of the Ontario Association" instead of the term "Registered Architect," as called for by the Act ?

The President : I fancy if he was not a member he could be prosecuted under the common law of the land, without any reference to this Act at all.

Mr. Henry : The Act calls for a fine for using it.

Mr. Edwards : I think we should submit this matter to our legal adviser before taking any action.

THANKS.

Mr. Gambier-Bousfield moved, seconded by Mr. Langley, that a vote of thanks be tendered to the Minister of Education and the professors of the School of Practical Science for the use of the building during the Convention, and that a copy of this resolution be forwarded to the Hon. Mr. Ross. Carried unanimously.

ELECTION OF COUNCILLORS.

The President : Now we will proceed to the election. I rule that each member must have a majority of the votes present, and if this number is not reached the ballot will be taken.

Nominations were made for the following : Messrs. Ewart, Denison, Curry, Townsend, Belcher, Moore, Darling.

Mr. Darling pleaded lack of time, and retired.

The scrutineers, Messrs. Symons and Langley, reported the election of Messrs. Ewart, Townsend and Curry.

Messrs. Langley and Symons were re-elected auditors unanimously.

The President : Gentlemen, I think that finishes the business of the meeting. Before you disperse I beg to thank you very much for your attendence during the sessions, and for the very quiet spirit in which everything has been discussed and undertaken ; and I hope to meet you this evening at 7.45 at Webb's.

The Convention then adjourned.

THE BANQUET.

About seventy-five gentlemen sat down at Webb's restaurant, and after having partaken of a sumptuous repast—

President Storm opened the proceedings by giving the toast of "The Queen," which was responded to by the company singing the National Anthem.

"Canada—the Garden of the World," gave Col. Fred C. Denison occasion to say many good and loyal things about the country we all love, which the company received with enthusiasm.

Mr. Kivas Tully, in proposing "Success and Prosperity to the Ontario Association of Architects," referred to the developments since 1844, when the only architects in Toronto were Mr. Lane, who built the present City Hall ; Mr. Howard, the city engineer ; Mr. Young, who built the east wing of the University ; and Mr. Thomas. He congratulated the Association on its growth. For himself, he had completed his half century as an active architect and civil engineer. (Applause). He had spent thirty-four years in the Government service here, and during the last twelve months had certified accounts for public buildings and repairs equal to $600,000 ; and since entering the public service his certificates had averaged about $450,000 a year. (Applause). It was no sinecure to look after all that. He was pleased to see the beautiful buildings that are put up in Toronto from year to year. Some of them he had handled himself, but they had gone beyond him in many respects. Style has materially altered ; he preferred the old classical style to the neo-Greek, as you call it—(Laughter)—or your Queen Anne style. (A voice—"Waite"). (Renewed laughter).

Mr. Rastrick responded on behalf of the older members. The Association would do honor to the craft and to every one belonging to it. He was pleased that a by-law had been passed which would prevent architects from trafficking their integrity and their honor against their clients, by dealing with manufacturers on commission. (Hear, hear). Every man should stand up for the honor of his craft. We have to make our position felt by the different professions. We are gentlemen of descent—and I am an Englishman, and a Yorkshireman at that. (Laughter). Yorkshire has given men that gave us the Bible to read at our leisure. You can trace almost all the laws that have improved our Magna Charta from Yorkshire. (Laughter). I am sorry to allude to it, but it is a fact that we can't deny—it has given us such sons as I am. (Great laughter). I love my profession as I love my mother. Our craft has been honored for ages past. For thousands of years an architect was always held in the highest esteem. In history, architecture is spoken of in the most glorious and honorable manner. I hope to see my brother architects in all the leading positions—not politics, because I have found they can't be politicians without being liars. (Boisterous laughter). Keep clear of politics, and you will have more sound, practical thoughts by which to carry on your profession. (Applause).

Mr. Curry on behalf of the younger men, trusted that Mr. Tully would be spared to practice many years yet. Many of us would like to have our time occupied to the same extent that his is—(Laughter)—and get five per cent. for the work. The progress of our Association has been greater than any of us expected last year ; we had not much hope of obtaining the Act, but we secured it very shortly after our last annual meeting. Though it is not just what we would like it to be, still it is a basis on which to work, and in the course of a few years we will have all that is necessary. (Applause).

Mr. Edmund Burke, in proposing the toast of the "Civil Engineers," coupled with the names of Messrs. Macdougall and Jennings, said the times had changed. Architects were paying more attention to the strength of their buildings, while engineers were giving more thought to beauty in design.

Mr. Allan Macdougall, in responding, said the engineers had led the way by obtaining an act of incorporation, but the architects had gone farther, and had by their Act become the first governing body, who will shortly say who are to be members of the profession. The schools in Ontario, and also in Montreal are doing an immense amount of very valuable work in training the younger men ; and from what we saw to-day in the School of Science, I am sure that the architectural branch there is going to hold its own and make its mark in a very prominent way upon the future young men of your profession. Permit me to point out one small matter which your Council might consider. In the Public Library here there is a very large and valuable collection of books on architecture, decoration, and every art ; but they are not in a position to be consulted by those who would derive the greatest benefit from them. A grant of $30,000 has been put in the city estimates for this year, and the first time the bonds of the city are sold, provision is to be made for this sum for the erection of a building to be used for reference-library purposes. Now, gentlemen, you are all working in the lines of art ; art is really the foundation of the architect's profession. We have here a number of young men and manufacturers, who are doing beautiful work, modelling and improving the architectural taste. You as a body have taken a very proper step in throwing your patronage over your Architectural Sketch Club ; and I think you might use your influence as a body to get the City Council to carry out at once the idea of a reference library with proper appliances, where any man can go—engineers as well as architects, modellers, designers, and students of the schools of art—and be able to study quietly, as they do in the large libraries in England, works which are of great value to them. (Applause).

Mr. Jennings (City Engineer) : I congratulate the members of the Association on their advancement, and trust it will continue till the organization shall become second to none. As city engineer, I hope to have more intimate acquaintance with you, inasmuch as it is my desire to establish an architectural branch in connection with my department—not to interfere with your legitimate professional operations, but to assist you, and protect you against men who are building without the supervision of architects or men trained to thoroughly understand what is intended and desired. (Applause). I hope this will be an assistance to you, and that you will look upon it in that light, and assist in furthering this object. Now, if you will allow me, I will mention what, as a city, we require—a public building of such magnitude and design as would be in keeping with Toronto as it is now, and as it is likely to be hereafter. (Hear, hear). We have not a hall in this city fit for any public purpose of an extensive character, either political or social. Could you not use your influence to get the city to go into something beautiful—something that would be characteristic of the place as well as useful ? It does not necessarily follow that such a building should pay a dividend on its cost. We must look beyond that, as a city ; we must have something ornamental ; and I mention this, as it is of the very greatest necessity, in my opinion, that at a very near date such a structure should be erected. (Applause).

Mr. Curry proposed the toast, "The School of Architecture and Engineering," coupled with the names of Profs. Galbraith and Wright, and in doing so said : The training there received by students is essential as a ground work for practical work in an architect's office. The school is now only in its infancy, but it will be an easy matter to make it equal to any in America.

Prof. Galbraith said he was doing everything possible to bring the school into close connection with the architects, because he felt if the school did not do its work on lines they approved of, it would be a failure. The true view of education is to have the young man's work so arranged that he sees the relation of the different parts and gets a certain amount of training in the elements of his profession. It is impossible to turn out full-fledged architects from a school, because the important factor of the sense of responsibility is absent. Practical problems are presented to the student, and he has to analyze them and put his knowledge together as best he can and get out the results—that is to say, of the same kind that a man should try to obtain in practice. The idea should rather be to find out principles, and use practical experiments of all kinds for the sake of determining principles. Under the old system those principles were simply stated by the teacher or read from a book, and the student got a very dim idea of them. School work is analytic ; practical work is constructive. The professional architect has not time to make experiments to find out, say, whether wood or iron or stone will stand a certain stress. He has to get results from somewhere. Now, in a school, all experiments of that nature should be made. A man trained in this way is not a practical man ; but when he goes into an office he has got a good start. We must depend upon his practical education in the office, and on work afterwards, for his becoming a successful professional man. I listened with a great deal of pleasure to Mr. Gambier-Bousfield's paper on "Education" ; and I think there is great hope for a profession when it takes an interest in the education of the younger members. (Applause). It is certainly unselfish as far as you are concerned ; and yet, after all, it is the true sort of selfishness. You may depend upon it that if young men get proper chances for scientific and artistic education they will do more to put the profession in a proper position before the world than anything else. Up till now that was not necessary ; but competition is keener, cities are larger, and a greater number of professional men must be employed. If young men have not the chance of being trained systematically the profession must go down. Men in all professions desire technical education. In spite of all that is said about the unpracticalness of young men turned out of these schools, yet they are preferred, I think, by professional men to those who have had no previous education—(Hear, hear). I have been assured that it is quite possible for a great number of architectural students who are engaged in offices to attend lectures in the School of Science in the mornings. We try to hold most of our lectures in the mornings, and devote the afternoon to practical work. I was asked by Hon. Mr. Ross, the Minister of Education, if it was not possible to do something to aid the students in the offices. Now, we are quite prepared to take all students who like to come up between nine and one o'clock. All the purely architectural lectures, on the History of Architecture and Ornament, Decoration, and so on, take place between those hours, as also some lectures on Construction ; and I should be very happy if the students could arrange to leave the offices and take those lectures. It would not take, perhaps, more than an hour some days, and two hours at the most on other days, to attend this work. The regulations of the School are such as to admit of special students—students not taking the whole course. (Hear, hear, and applause).

Prof. Wright expressed thanks on behalf of his students for the benefit derived from the Convention. He trusted that next year the school would be able to offer special attractions to members of the Association. He trusted the collection of photographs would be of benefit and interest, not only to the School, but to all members of the profession, and that they would call frequently. Before next October all the testing machines would be in working order, and these would be of great interest to the profession. He hoped his work might be done in harmony with theirs. (Applause).

Mr. Paull, in proposing the "Royal Canadian Academy," coupled with the name of Mr. Smith, paid an eloquent tribute to the progress of art.

Mr. Smith, R. A., said : The Royal Canadian Academy, since its organization in 1880, has made its mark on Canadian life. Thirteen exhibitions have been held—one in each city in the Dominion. Last year pictures were donated to the National Gallery at Ottawa, to the amount of $1,000. Canadian artists are making their mark in the old lands, and it will not be long before Canada will have a history in art equal to that of any other country—age considered. (Applause).

Mr. Gambier-Bousfield, in proposing the toast of the "Younger Members," said the members of the Architectural Sketch Club were doing work that could not be compassed in architects' offices, and we are all glad to recognize that organization which is doing so much good in bringing the young men forward in their profession.

Mr. Gregg, in responding, said he was like a certain builder, who said he felt very much better fitted for the scaffold than the public platform. (Laughter). The rising generation of architects owe a debt of gratitude to the old members of the profession who have worked to raise the standard in Ontario. The benefits accruing from their labors will be largely felt by the architects in the years to come. We read in the CANADIAN ARCHITECT AND BUILDER, and heard in this Convention, with no slight feelings of terror and dread, that formidable list of subjects in which proficiency is required ; but still we press onward. When we look at our titled seniors we think of the honors that await us ; and we say, as was said of old, that "Even Solomon in all his glory was not R. A.'d like one of these." (Great laughter and applause). I am very sorry they changed that this afternoon, for I worked some weeks in the designing and construction of that joke. (Laughter). The object of our Sketch Club is to promote the interests of the profession, but we do this in an entirely informal manner. We combine architects and students ; we have a variety in programme, combining art work, lectures, debates, etc. (Applause).

Mr. C. H. Acton-Bond, Secretary of the Sketch Club, thought such clubs should be established in all the chief centres, as great good is done to the younger members. The basis of membership is broad, including architects, draftsmen, decorators and artists—in fact, we take all who will come, and thus widen our sympathies as much as possible, and by mutual aid we learn a great deal more than by restriction. In regard to the examinations proposed, they seem to us entirely satisfactory in the general arrangement. We are all glad to see things as they are—that is the general sentiment among the younger members ; and our Club will assist in furthering the aims of the Bill.

Mr. Edwards, proposed the toast of "The Press." He told of a doctor who had boasted that with five cuts and a few stitches he could make a man so that his mother wouldn't know him (Laughter) ; and of the response of a newspaper man, "Why, with one cut we can make a subject so that nobody would know him." (Laughter). But I am glad that that is not true of all the illustrations we have from our presses. All the instruction we have received in this Convention will be handed down to generations yet unborn ; and we owe a debt of gratitude to those who so powerfully aid us in our objects.

Mr. Mortimer, of the CANADIAN ARCHITECT AND BUILDER, was exceedingly pleased at the progress the Association had made, and would have been more so if there had been present a representative or two from the Quebec Association of Architects recently formed. He trusted on some future occasion to witness an assemblage of the architects of the entire Dominion.

Mr. Thos. Bengough asked to be allowed the privilege of reading his response, which was as follows : A novice attending a meeting of the Ontario Association of Architects would certainly learn a great deal both from what is said and also by observation. While the questions on the agenda deal with more or less technical subjects, still there is ample scope (by the use of the imagination), for excursions into other fields—at least into one-*Bousfield*. No *Price* was charged for admission to the meetings, which proved really interesting. The proceedings were enlivened by the performances of a skilled *Harper*, who discoursed sweet music. It is needless to say that under the voluptuous strains there were *Billings* and cooings and exclamations of "*Ough, Darling*." Of course these came from the *Galbraith*, and were considered quite *Wright*. A *Bowman* and a *Fowler* added to the entertainment by their skillful use of the long bow. They used *King* (William), who honored the company with his distinguished presence. Many members made vain efforts to *Curry* favor with His Majesty, by making their tongues *Wag*-ner the whole time, regardless of the *Law*. Even the presence of *Balfour* the oppressor did not check the flow of eloquence, "*Moore Power* to your elbow !" shouted the Irish members. All through the meeting a heavy *Storm* loomed up just in front of the assembly, but fortunately it did not break upon their heads. If any attempt had been made to *Burke* the discussion there would have been trouble. Allusion to the political elections, and reference to annexation and the *Ram-page* to capture Canada, caused several to cry out, "What *Aylesworth's Kennedy's* all right !" The presence of steady old apostles of the profession like *Peters*, *Paull* and *Symonds* was felt to be a restraining influence. The papers discussed were of great interest, and made much more so by the illustrations. For instance, Mr. Burke's paper on Slow-burning Construction was beautifully embellished by the members at luncheon—at least those of them who happened to have cigarettes upon their persons. The advantages of "Hot Water Heating" were clearly shown by Harry Webb, who cleverly managed, by the infusion of a few grains of mocha or Japan tea leaves, to make the experiment most interesting and enlivening. Mr. Gordon's paper on "Building Materials" was brought into undue importance at meal times, and it was shown that even what seemed to be most durable in the way of material was rapidly consumed and crumbled away. The exhaustion caused by the expenditure of gas in the Convention no doubt caused a good deal of the shrinkage in bulk. Whether or not such *Burning* material will stand the weathering of such a *Storm* as that which has been howling about us the past two days is no longer an open question. To Mr. Gambier-Bousfield is due the honor of illustrating in his own personality and nomenclature how a man can be the architect of his own fortune, and build unto himself a two-storey, double-decked, hyphenated edifice with mansard roof and attic ; but, as shown by Mr. Gambier-Bousfield, the foundation of such a structure must be of good, solid English material, and the finishing in German-French. After the banquet the company dispersed in all directions, some to the *Towns-end*, while others walked *Lang-ley* and lonely through the streets to the borders of the *Lang to(we)n*, and many had to bear the brunt of the *Storm* of *Wind-ere* they reached their homes. Possibly through the fault of the *Smiths*—or perhaps as the result of the banquet—it was found that one *Kay* would not *Go-in-lock*, and there were many loud *Knox*. This was found to be the case with those who lived on *Jarvis* street. When members were thus disappointed, they naturally thought of blue blazes, and would *Belcher* forth the name of *Gordon* and *Hellitsell*, though how these estimable gentlemen could be held responsible (having given only the ordinary certificate) any more than any Tom, *Dick* or Harry—it is hard to say. Such an interpretation would make this altogether a too *Strick-land*. Gentlemen, the *Bond* that cements you is one that includes every grade, from the *Denison* of the rural settlement to the graduates of the *Hall* of learning ; even a *Miller* and a *Butcher* have found a place, and join in the discussion of matters which are engaging your attention. Let the *Boult*-hee well driven, and let there be all boon and no *Bain* (at least not more than you now have) and may all your sons—*Wil*-son and *Morri*-son, and *Gib*-son, and *Simp*-son and *Wick*-son grow up in honor till they are known by their *White-head*. Gentlemen, with all these tempting viands before you, don't open your *Gil-more* than you should, else you will find *Pills-worth* more than par. Gentlemen, in this strain I must take up no *Mor-time-r* you will think I aspire to be a CANADIAN ARCHITECT AND BUILDER. (Great applause and laughter.)

Mr. Smith proposed the health of the Chairman, which was drunk amidst applause.

President Storm, in acknowledging the honor, said he had at all times received the greatest kindness from the members of the Association individually, and from the members of the Council, in all matters connected with the Association. He returned sincere thanks for this new expression of good will.

Mr. Balfour proposed the health of the Toronto members, which was drunk by non-residents. He said all the members he had spoken to had expressed the greatest confidence in the new Council. He trusted their expectations would be realized.

Mr. Connolly, in responding, thought he could not do better than propose the the toast of the "Secretary," who had probably done more than any one present to advance the interests of the Association.

Mr. Townsend said that since its inception everything concerning the Association had been of the greatest interest to him, and he was proud to have had a hand in the work. He felt his election to the Council to-day was the greatest honor that could be conferred upon an architect in Canada. He trusted every one would do all in his power to make the organization a great success. (Applause).

Mr. Kennedy proposed a toast to Mr. Curry, who had at considerable self-sacrifice labored to forward professional interests.

Mr. Curry said he had only done what every man should do for his profession, and he was only too pleased that the architects had taken up the matter as they had, and that the Association was in the position it has reached to-day. The point reached thus far is only a part of the way. We are going to raise the profession to its proper standing ; and until it is raised to that standard we do not propose to cease. (Applause).

Mr. Peters sang "The Friar of Orders Gray," and another song, Mr. J. Ades Fowler, accompanying him on the piano.

The meeting broke up about midnight.

PERSONAL.

Mr. Gemmell, of the firm of Smith & Gemmell, architects, Toronto, will spend a few months in European travel.

Mr. Robert Sellars, a well-known master builder of Kingston, Ont., died in that city recently at the advanced age of 99 years.

Mr. John T. Stokes, who for a quarter of a century has ably discharged the duties of County Engineer for the County of York, has recently been appointed to act in a similar capacity for the County of Wentworth.

The CANADIAN ARCHITECT AND BUILDER extends its congratulations to Mr. Fred. Bartlett, architect, Napance, Ont., who was married recently to Miss Maud Sills, of Sillsville, Ont.

Mr. A. A. Post, architect, Whitby, Ont., who for several years has rendered valuable service as organist of the R. C. Church at Pickering, was recently presented by the congregation with a gold watch and complimentary address.

Mr. W. J. Wilson, foreman for many years for Messrs. Keith & Fitzsimmons, plumbers, Toronto, was honored by his employers and fellow employees by being presented on the eve of his marriage with a handsome dinner service and case of cutlery.

Mr. Ernest Wilby, one of the most promising architectural students of Toronto, left the city a fortnight since for England, where he hopes to find the opportunity of adding largely to his store of knowledge. It is the sincere wish of his friends in Toronto that his desires in this respect may be fully realized.

A NEW REGISTRAR APPOINTED.

ATTENTION is directed to the advertisement in this paper announcing that Mr. W. A. Langton has been appointed Registrar of the Ontario Association of Architects, the position having been rendered vacant by the appointment of Mr. S. H. Townsend to the Council. All communications intended for the Registrar should therefore in future be addressed to Mr. Laogton.

THE incandescent light supplied from a well-equipped central station and by means of an exclusively underground system of mains and service pipes, may be looked upon as one of the most artistic and beautiful developments of the industry. Especially is this the case in the more modern edifices where the interior wiring is entirely concealed and the architectural and decorative details are made to conform and adapt themselves to the perfect illuminant. The glow-lamp lends itself in a peculiarly successful manner to the production of novel and charming effects. Whether in brilliant combination with reflecting mirrors and cut glass, or modestly peeping forth from the heart of a cluster of flowers, natural or artificial, there is a charm in the softness and steadiness of the light that is all its own. While for a time perhaps the cheapness of its smoky and noxious competitor may be detrimental to its general introduction, it is a fact not to be disputed that the cultured and æsthetic taste of modern society is creating a demand for it that is more than keeping pace with the supply. The advantages of the low-tension system of distribution in connection with underground mains are many and obvious. The difficulties are, that in a large city the demand comes from so many quarters that they cannot be reached as quickly as desirable, and would-be good paying customers are for a time left out in the cold ; but this is only a temporary evil. The multiplication of central sources of supply will remove the difficulty, and the admirers of the modern illuminant will have the satisfaction of a perfect service when their district is reached as a compensation and reward for the exercise of the needful Christian grace of patience. Those who are not in a position by reason of distance to avail themselves of the coveted light, have the satisfaction of knowing that when it does come along they will have the advantage of all recent improvements and modern ideas. There are some fixtures for drawing room use that are a perfect dream of beauty, and every day adds to the number and variety. The low-tension system, while not so far reaching in its earliest inception as some others, still has advantages by reason of the means at command for keeping a supply of electricity in the mains at all times and seasons, irrespective of the difficulties that are inseparable from central station operations, even with the most perfect and approved facilities

SLOW-BURNING CONSTRUCTION.

By E. Burke.

Many of the methods of building now in vogue are very defective with regard to fire-resisting qualities. These methods are retained with a tenacity which indicates a very conservative habit of mind and an unreasoning adherence to traditions of methods of building which are unworthy of this scientific and progressive age.

The prevailing type of building could scarcely be improved upon if we should set ourselves to design a structure which should in the most rapid manner convey fire to every part while at the same time shielding the conflagration from the effects of water thrown upon it from the exterior. Every floor consists of an aggregation of flues connected with other flues between the strapping or alongside of hot air flues, runs for pipes, etc. In very many instances it occurs that a fire, starting in the basement, next shows itself in the attic on account of this method of construction, or by means of unprotected elevator and light shafts.

The method of attachment of the beams and joists to the brickwork is also very defective and illogical. The beams are so securely anchored or tied into the brickwork as to utterly demolish the walls when these burn through and drop. In like manner the joists cause similar destruction of the remaining walls. Frequently, after carefully bevelling off the ends of the joists with the hope of averting this disaster, we deliberately anchor a number of these very joists to the walls so thoroughly as to entirely nullify the good effects of the bevelling. Again, we still have occasion to observe the use of 3″ x 4″ bond-timbers in walls only 9″ to 13″ in thickness. Could any method be invented for more surely bringing down a wall than this? This method of building makes a party wall of less thickness than 18″ practically useless as a reliable fire stop, while even the latter thickness will, with the construction referred to, permit the passage of smoke and the consequent ruination of goods.

The methods of thoroughly fire proofing buildings are too expensive for the ordinary class of store, factory and mill property. A fire-proof mill is conceded to be a commercial impossibility. The enormous losses in buildings of the warehouse, mill and factory class, constructed in the ordinary way, combined with the heavy premiums exacted by insurance companies, forced the mill owners in the large manufacturing centres of the New England States some years ago to call a halt and endeavor to reform the methods then in vogue. The system of slow-burning construction was gradually evolved through the efforts of Factory Mutual Insurance Companies. As a proof of the success of this system combined with the use of automatic sprinklers, the rate of insurance per annum has been reduced from 2½% to less than ¼ of one per cent. The principle of this system may be briefly described as "the construction of buildings in such a manner as to offer the most efficient means of retarding the spread of fire; the aim being that the limits of destruction shall be reduced to a minimum by making buildings slow-burning, rather than striving to make them fire-proof."

The chief points to be avoided are rafters or joists placed at the usual 16″ to 20″ centres and set edgewise, (Fig. 5). all hollow spaces in either roofs, floors or wainscot, boxed cornices, open elevators or stairs, iron doors or shutters.

The main points to be observed in safe construction are: Solid beams or their equivalent in planks bolted closely together and spaced 8 to 10 feet centres; ends of timbers ventilated by a proper air space, (Figs. 1 and 2), Fig. 1 being a simple iron plate, and Fig. 2 a cast iron box. Wooden posts of proper size, bored with at least an 1⅛″ core with ½″ holes near top and for ventilation (Fig. 3), (a) shows iron pintle and (b) wood post carried to cap of post below. Floor planks of from 3″ to 5″ thick according to span, finished floor of 1″ to 1½″ matched stuff with ¼″ of mortar between or double thickness of asbestos sheathing paper (Fig. 6). A space of ½″ to ¾″ should be left between walls and floors to allow for swelling of planks and the gap thus formed may be concealed by a fillet. Roofs nearly flat of at least 2″ thickness, beams projecting beyond walls forming brackets for gutters (Fig. 4). Doors where necessary to stop fire of double inch put together diagonally and completely encased with tin locked and tacked, the frames also covered. In many cases these doors should be automatic in action, an alloy fusible at a comparatively low temperature being incorporated with the apparatus holding them open.

The ideal slow-burning mill is but one storey in height, the area being obtained by greater width of building, light reaching the centre by means of skylights or monitors (Fig. 9). When land is expensive or the available space contracted, it becomes necessary to build higher, but always of course with increased fire-risk. The stairways as well as the elevator shaft should be enclosed with solid brick walls (Fig. 7). All belt holes should have raised edges and the doors thresholds to retain water and prevent damage to lower floors.

The saving in height of building where the system is carried out in its simplicity will amount to about 10″ in the height of each storey, resulting in less brickwork, less stairs, piping, heating and belting (Fig. 8). The weight of the old style floors and the slow-burning is nearly identical, but if the sheathing of ceilings of the former be omitted the difference is about 10% in favor of the latter.

With solid floors belt holes can be conveniently cut at any place between the beams without the weakening effect so often seen in factories, when frequently the joists have to be cut. It is also claimed that the solid plank floor has less vibration than the hollow one of joists and thin floors. There is also the absence of lurking places for vermin and dust.

The elastic, or cushion property of wood, makes it the most suitable and practicable material for the construction of floors for industrial purposes. Machinery will rack and wear out much sooner on stone or iron, unless cushioned, than on wood.

Southern pine, on account of its qualities of strength, straight grain and elasticity, is the favorite wood for mill beams, but it would be altogether too expensive for use with us. Our white pine of perhaps a little larger scantling, is a very suitable wood.

The strength of wood varies greatly, even in pieces of the same kind and dimensions. Authorities say that it is the elastic limit rather than the breaking strength which should be considered in the case of floors carrying weight, and that continual strain causes what is termed fatigue of the fibres of the wood, causing eventual breakage under loads of less than the instantaneous breaking weight. A load of less than the elastic limit should therefore be provided for, and as this limit is not obtainable with any degree of accuracy, a factor of safety of 6 is recommended for dead loads, and double that for live loads.

Woodbury, in his work on mill construction, gives some very interesting tables of strengths of beams and floors. The following are a few quotations for a storehouse, but not for the support of machinery, the deflection being somewhat more than would in that case be advisable: Beams of southern pine, 8 ft. centres; spruce plank, weight of goods 100 lbs. to the sq. ft. in addition to the weight of material of construction; thickness of floor plank 3.42; span 13.73 ft.; beam 6″ x 12″; for a span of 17.23 ft., a 7″ x 14″ beam; and for a span of 20.96 ft., a beam 8″ x 16″. For a load of 200 lbs. to the sq. ft., a 12″ x 6″ beam would be safe for a span of 10.98 ft; a 14″ x 7″ beam for 13.80 ft; and 16″ x 8″ for 16.81 ft., with a floor thickness of 4.83 inches. The elastic limit of the deflection of floor beams is said by the same writer to be about one 400th for a span of say 25 ft. or ¾″, while the floor plank in a span of 8 ft. should not deflect more than 1-13″. (Mr. Woodbury confesses that these limits are empirical and matters of opinion based on experience, and that they have been exceeded with no apparent evil results.)

On account of the increase of the tendency to lateral vibration in proportion to the increase of the height of the building, the width of the floor beams will need to be greater in a building of several stories than in a one-storey structure. The deflection of the planks of a floor have been proved to be less where they cover two than where they cover one span, and the joints should be alternated so that an equal load may be imposed on each beam.

Mr. Woodbury has computed and compiled a very useful table* of distributed loads upon southern pine beams, with limit of deflection. By its use it is a very simple and short process to find the safe load or the required span of floor beams for an assumed load. For example. The safe load per sq. ft. upon a floor with 12″ x 14″ beams of southern pine 10 ft. centres and 24 ft. span. The table shows that a beam 14″ deep of 24 ft. span will sustain 42.37 lbs. per ft. of span for every inch in width of beam. Multiply this by 12 for the width of beam 12 x 42.37 = 508.44 lbs. per foot of span, and the bays being 10 ft. wide, this corresponds to 508.44 ÷ 10 = 50.84 lbs. per sq. ft. of floor. But the weight of floor must be deducted thus:

Beams.....	5.60 lbs.		
1¼ Flooring..	5. "	Total safe load.....	50.84
Mortar.....	6.25 "	less weight of floor...	26.85 equals
Plank.....	10 "		
		say.....	24.00 lbs. per sq. ft.
Total.....	26.85		

or for required span of beams assume the load at 30 lbs. per sq. ft., add weight of floor, say 27 lbs.—gross load 57 lbs—beam 12 x 14, 8 ft. centre. Total load per ft. of beam 57 lbs. × 8 = 456 lbs., which divided by 12 = 38 lbs. per inch in width. In the table under 14 the nearest number to 38 is 39.08, which corresponds to or indicates a span of 25 ft.

Wood, as a material for mill columns, has been proved more reliable than unprotected iron in case of fire. Its cost is not great, and defects are easily discovered, which is not the case with cast iron columns. The only recorded tests of full-size wood columns are those made at the U. S. arsenal Watertown, Mass., for the Boston Manufacturers' Mutual Insurance Co. Tests of small sized models have been proved entirely unreliable. The average crushing load per square inch was 4,422 lbs. for cylindrical columns 12 ft. in length and 10½ inches diameter. Cylindrical columns represented a resistance 24% greater than a tapered column of the same diameter at base, while the difference was 56% in favoring a square column with the angles merely chamfered an inch. The reduction of strength when the load was slightly eccentric was very marked, showing how necessary it is to insist on careful setting. The crushing resistance of bolsters was found to be very small, showing that they are quite unreliable when heavy weights are to be carried. This would indicate that the use of bolsters or the supporting of posts carrying heavy weights from beams is decidedly inadvisable (Fig. 5).

In concluding this paper, the writer would remark that while the system of slow-burning construction may be suitable for buildings devoted to manufacturing purposes, and in some cases to warehouses, it should not be seized upon as a panacea for the safety and mode of construction of every building. Some enthusiasts have rushed to this conclusion and have found themselves involved in insurmountable difficulties when attempting to bend the system to their purpose. Every building contains its own constructive problems, which should be worked out in a logical manner, and with the invention born of the needs of the occasion.

The people of Salmon Village, Peel County, have had the name of their post office changed to Terra Cotta. This, in the opinion of the Montreal *Gazette*, is being particular to a shade.

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* Fire Protection of Mills. P. 129.

"CANADIAN ARCHITECT AND BUILDER" COMPETITION FOR A CITY HOUSE.

This competition, announced in our December number, has resulted in the sending in of nine sets of designs, among which are three of decided merit. It will be remembered that the house was to cost not more than $4,000, and was to be for a young architect having a family of three children and an income of about $2,500. The lot was only 30 ft. wide and on the south side of the street, and the matter of direct sunlight to as many rooms as possible was to be a factor in the merit of the designs. The Architectural Guild appointed Messrs. Darling, Norman Dick and Burke a Committee to decide upon the respective merits of the designs.

The first place is given to "Soleil," (Mr. Arthur Wells). The plan has been admirably worked out, indicating most painstaking effort and careful attention to every detail necessary for the working of the domestic machinery with the least degree of friction and annoyance—a point which would unfailingly commend itself to the housewife. The placing of the axis of the drawing room north and south is rather unique for a house on a narrow lot, and was a bold move to secure two or three hours of sunshine in a north room. The dining room is admirably lighted and would make a very cheerful room. The kitchen, though a trifle small, is well arranged for the placing of stove table, and for cross ventilation by means of the windows, a very important point where the stove has to be used in both summer, and winter. The arrangement of side entrance, stairs and pantries could scarcely be improved upon. The planning of the first floor is also excellent, especially the relation of the bath room to the family bed room, enabling it to be used as a dressing room. The situation of the sitting room and studio would reduce the bedroom accommodation too much when the size of the family is taken into consideration, but the disposition would be excellent with a smaller family. Most *mothers* would not be content to banish all the children to the attic.

The author has, however, anticipated this by the suggestion that the studio could be placed in the attic and one of the first floor rooms utilized as a bed room. The basement is well laid out. While several windows are placed in the side walls, no room is dependant on them for its lighting, and yet they are useful for ventilation and give a certain amount of light. The planning as a whole is compact and simple, and indicates the hand of one who has either had much experience, or has given close and analytical study to the problem.

The elevations are a little immature and indicate some uncertainty in regard to detail, and yet are conceived in a broad and artistic spirit, their very reserve being a point in favor of a design intended for an architect's own house. The rendering is fair, though somewhat timid; far better this, however, than to overdo it in a more ambitious attempt. The owner would probably have a hard time in getting his plans passed in the Commissioners' office in a city like Toronto. So much wooden construction and tile-hung work on the first floor would send the officials into a fit.

"Au Revoir," (Mr. E. Wilby), is given second place. If his planning had been equal to his elevations, he would have run "Soleil" very close for first place. The plan is an excellent one, based to some extent on local lines, but sufficiently progressive to indicate considerable experience and study. The location of the study would not be at all conducive to the quiet and peace which an architect would require if engaged in serious work at his home. The author does not suggest any other place, but with so commodious a house a room upstairs could easily be spared for the purpose, allowing the ground floor room to be used as a family sitting room, although it is not well enough lighted for either purpose. The parlor would be an entirely sunless room, except the few rays which might be borrowed from the study for an hour or two in the morning. The serving pantry is rather publicly placed, but gains in accommodation by its position. The back stairs starting out of it without means of shutting off sounds and smells at either top or bottom is a decided defect. Doors should be placed in both positions if immunity from these is to be properly secured. The kitchen has a plethora of windows, three being given it, while advantage is not taken of a good opportunity to secure cross ventilation. The bed rooms are well disposed, with good closet accommodation, except the children's room, which of all rooms requires ample provision.

The front is a good piece of work, like "Soleil," broad and artistic in spirit and exhibiting more maturity in power of design, while the rendering is crisp and sparkling, indicative of much facility and practice with the pen. The double gable with its two sets of couplet windows is very effective, but we doubt its suitability to our climate even though the vallies be reduced to a minimum as suggested by the author. The prize for the best perspective is awarded to "Au Revoir," "Soleil" not sending one, and that by "His Aspirant" being the only other worthy of praise or comment.

The third position is given to "His Aspirant," (Mr. Murray White). A plan containing many points of merit, and which, but for one or two unfortunate slips, due evidently to want of sufficient study, would have made a good run for second place.

The parlor, two children's rooms and also the nursery, which is placed in the attic, would get no direct sunlight. If the positions of nursery and spare room had been reversed, and a south dormer inserted, this defect would have been of less account. The position of the child's room is faulty in that it cannot be reached from the hall. The rearrangement of the two front rooms would have made this possible. The position of doors into serving pantry would expose the kitchen. If the sink had been placed in the west wall, the doors could have been better placed. The author steals light on the west side from his neighbor, who, if of a crusty disposition, would probably erect a high and ugly boarding in front of the staircase windows by way of revenge. The external treatment is dignified and scholarly, and would be considered a creditable piece of design in any office. The rendering is not so crisp as that of No. 2, and is somewhat inclined to stiffness, the detail being brought with almost geometrical accuracy; the lights, however, are well managed, and the accessories of trees and foreground are a decided help to the perspective.

The Committee were agreeably impressed with the general excellence of all three of the above designs, and have to congratulate the authors and the Toronto Sketch Club upon the distinct advance visible in the work of its members. They feel safe in saying that if these designs were executed side by side they would present an artistic and admirable trio of houses—houses sober in design and devoid of anything approaching the unrestful, clap-trap, rocky sort of design, which may be the fashion to-day and discarded to-morrow by a fickle public.

"Nox" is placed fourth with a very good plan indeed, generally similar in its layout to that of "Soleil" but not so well arranged. The hall is too pretentious for a house of this class, and its spaciousness is obtained at the expense of the dining room. The latter would be gloomy, the windows, which are only in the south side, being shaded by the projection of the upper storey, some 5 ft. A window near the north end would be a great improvement, lighting that end of the table and enabling a person sitting at the fire to read with some degree of comfort. The drawing room is well placed, and the position of windows would secure a glint of the western sun during three or four months of the year. The servants' room on first floor breaks badly into the library, and would be much better placed in attic, being too small to be of much use. The exterior is better in conception than in its rendering. Like "Soleil" it is timid, and the detail indicates immaturity, but the attempt at breadth of treatment and the absence of fussiness indicates that the author is upon the right track. He needs practice in drawing, and especially in regard to his tree-work.

"Ambition" comes fifth in position. The amount of work which he has put upon his drawings while indicating a laudable industry, is almost painful to behold. If the decision rested in the hands of a jury of "citizens," upon whom a multiplication of lines and excessive elaboration would produce a "stunning" effect, this effort might have had some chance for a prize, but with a jury of architects this very fussiness was its own condemnation. The plan, as a plan, is of good ordinary type, but the question of adaption to the site has apparently been ignored. The dining room is lighted solely by a bay at its eastern and narrow end, and this bay extends to within a few inches of the boundary line, leaving a space of not more than 3½ feet between it and the wall of the adjoining house. The same fault applies to the bed room above. The only rooms receiving appreciable benefit from the direct rays of the sun are the kitchen and the servants' bed room above it. The draughtsmanship is neat to a fault, and the rendering of perspective better than the design. The author needs to study the methods of good draughtsmen and to study English house design and the more sober efforts of educated men in the eastern states in lieu of designs from cheap American publications which are designed to catch the eye of the jig-saw carpenter. The rest of the designs are scarcely worthy of classification, but may be mentioned in order, as follows: "Grotto," "B," "Helluo Libronium," and "Horse Shoe." All of these designs indicate that their authors have engaged in no serious architectural study, and have not been in the habit of seeing good work or good publications of any kind. The impression conveyed to the jury by their efforts was that the authors were either the veriest beginners, or that they had mistaken their calling.

The jury do not desire to discourage any aspirant to architectural fame, but at the same time consider it a kindness to intimate that ultimate success may be hoped for only by those who are willing to engage in earnest and devoted study, combined with a certain talent and aptitude for the work.

MONTREAL.

(Correspondence of the Canadian Architect and Builder.)

The annual meeting of the Canadian Society of Civil Engineers took place this year in the Society's new rooms in Montreal. There was shown to be a falling off in the membership. Mr. H. P. Vantelet's paper on bridge construction was awarded the President's medal. The officers elected for the current year are: Sir Casimir Gzowski, president; J. Kennedy, E. P. Hannaford and J. F. Lynch, vice-presidents; H. Wallis, treasurer; H. T. Bovey, secretary; F. Chadwick, librarian; council—Percival St. George, F. R. S. Brown, W. T. Jennings, H. N. Ruttan, K. W. Blackwell, F. N. Gisborne, E. A. Hoare, Joseph Hobson, Sir J. Truteh, T. Monro, P. A. Patterson, W. P. Anderson, J. D. Barnett, C. E. W. Dodwell, H. A. Donkin. The annual business meeting was followed by the usual banquet at the Windsor Hotel.

The firm of Nelson & Clift, architects, has been dissolved.

Mr. John James Browne, architect, has been appointed a Commissioner of the Superior Court.

PROVINCF OF QUEBEC ASSOCIATION OF ARCHITECTS.

A SPECIAL meeting of the Council of the Province of Quebec Association of Architects was held on the 15th and 16th of January, to organize under the Province of Quebec Architects' Act. There were present: Mr. J. W. Hopkins, President, Montreal, in the chair; F. X. Berlinguet, 1st Vice-President, Quebec; V. Roy, 2nd Vice-President, Montreal; A. C. Hutchison, Montreal; A. Raza, Montreal; A. F. Dunlop, Montreal; M. Perrault, Montreal; A. T. Taylor, Montreal; J. F. Peachy, Quebec; W. E. Doran, Treasurer, Montreal; C. Clift, Secretary, Montreal.

Moved by Mr. A. F. Peachy, seconded by Mr. A. F. Dunlop, "That we, the present Council, now organize as called for by Clause 6 in The Province of Quebec Architects' Act, No. 78, which was sanctioned and came into force the 30th of December, 1890." Carried.

It was then moved by Mr. J. F. Peachy, seconded by Mr. A. F. Dunlop, that this Council elect Mr. J. W. Hopkins, President; Mr. F. X. Berlinquet, 1st Vice-President: Mr. Victor Roy, 2nd Vice-President; Mr. W. E. Doran, Treasurer; Mr. Chris. Clift, Secretary. Carried.

The by-laws were then amended and in the meantime adopted.

It was moved by Mr. Taylor, seconded by Mr. Hutchison, "That the registration fee be raised to $20, all members that have paid to pay an additional $10, this to take force until time provided by Act of Incorporation, then the registration fee to be as called for in the by-laws just amended." Carried.

Moved by Mr. Raza, seconded by Mr. Dunlop, "That Messrs. Roy, Hutchison and Doran be a committee to look over the by-laws as amended at yesterday's meeting, and report to an early meeting of the Council."

It was decided that the design for seal and diplomas of the Association should be open for competition among the members, and submitted to Messrs. Dunlop, Raza and Clift for approval.

It was moved by Mr. Raza, seconded by Mr. Clift, that a board of five examiners be elected at this meeting, and three examiners to form a board at all examinations. Carried.

The following were elected: Victor Roy, W. T. Thomas and A. T. Taylor, Montreal; F. X. Berlinquet and Chas. Baillairge, Quebec.

It was decided to at once advertise in the *Official Gazette* the completion of the organization; also to have the By-laws and Act printed as soon as possible to distribute among the members.

TORONTO ARCHITECTURAL SKETCH CLUB.

A PAPER on "Building Material," which will be found in the March number of this journal, was read before this Club by Mr. H. B. Gordon on Tuesday evening, January 27th. After a vote of thanks had been tendered the lecturer, the competitive designs for a "Window in some Distinctive Style," were criticized by Mr. Frank Darling. Mr. C. H. Acton Bond was awarded first place in the senior division, and Mr. J. G. S. Russell in the junior division.

The subject of this competition had been suggested to the critic to induce the members to make a more thorough study of style, and the fact that a large number of the designs sent in shewed a striving after originality and prettiness of drawing rather than this, was somewhat disappointing. It is hoped in the next competition that style will receive more attention, and the detail will be clearly shown. The subject which has also been suggested by the critic is "A Mantel-piece in Stone or Marble," with special reference to style.

A novel feature was introduced into the Club's work on Tuesday, February 10th, when a debate was held on the following:—Resolved: "That an architect devote himself to the artistic entirely, and that construction should be relegated to engineers, as the present system of practise is detrimental to good architecture."

Messrs. C. J. Gibson and A. H. Gregg upheld the affirmative and brought forward many able arguments, conclusively showing that the work expected of an architect of the present day is so multifarious that it is impossible for one man to do it all as well as it should be done, and therefore a division of labor is necessary, such as we already find has taken place to a certain extent in the legal and medical professions, the proposal being that an architect should only know enough of the nature of materials and construction to enable him to design consistently, and that the rest of his time should be spent in the study of architecture as an art in all its branches, all scientific construction, plumbing, heating, etc., being handed over to an architectural engineer. Messrs. Gibson and Gregg deserve great credit for the thorough manner in which they worked up their subject, and the time evidently spent on it.

Mr. J. A. Pearson made a capital speech on the negative side, and brought out some strong points in a very vigorous manner, whilst the leader of this side, Mr. S. G. Curry, in a long speech analyzed the various arguments brought forward, and taking a wide range, spoke of the subject generally, the chief argument of this side being that the word "entirely" coming in the resolution killed the arguments brought out by those on the opposite side, that an architect should know anything at all of the nature of materials or construction, and therefore their reasoning was not valid.

Mr. Edmund Burke, who had kindly consented to act as Chairman for the evening, concurred in this literal interpretation of the resolution, and decided in favor of the negative.

It is intended that this shall only be the first of a series of debates to be held by the Club, and certainly if they all prove as interesting as this one, and members will take an active part in them, they ought to be of great benefit to all.

The classes in mathematics and construction conducted by Mr. S. G. Curry, are now fairly started and promise to be very beneficial to those taking part. The average turn out up to the present has been fairly good, but certainly with the large number of names on the membership roll of the Club, there ought to be a considerable increase in the attendance now that all preliminary difficulties have been conquered.

At the regular meeting on Tuesday, 24th inst., Mr. G. A. Reid, R.C.A., will give a talk on "Architecture from an Artist's Standpoint"; and as this promises to be unusually interesting, those at all interested in the subject will be welcome visitors at the Club rooms on this occasion.

COMPETITION FOR CHURCH DESIGNS.

WE should like to draw the attention of our readers to the Competition for Church Designs. The Committee of the Presbyterian Church which has the matter in hand, is desirous of having as many designs sent in as possible, and is prepared to publish all those of merit. The Committee does not expect that the three prizes which it has decided to give are sufficient inducement to competitors to send in designs, and it has only proposed to give these prizes as a small acknowledgement on its part of the obligation under which the Committee will be placed to those who may send in designs.

The Council of the Ontario Association of Architects has undertaken to conduct the competition, because it believes that much benefit may result to the church architecture of the Province through the effort that is now being made by this denomination. There is no intention to publish any designs which may be submittted in a manner which will allow of their being used by any congregation which desires to erect a church, without employing the author. Only the perspective and the plans will be shown, with the object of 1st, giving examples of what is considered good ecclesiastical architecture by competent judges; and 2nd, to afford congregations proposing to build such information as will enable them to select an architect capable of designing a church such as they may want, with some artistic excellence.

We omitted in the conditions of the proposed competition to state that designs should be sent in under mottos to the Registrar of the O. A. A.

In the 4th class, the last clause "with vestry or school room" should read "with vestry and school room." Some competitors have asked for information as to the proper position of choir. As the competition is one which is for the purpose of securing good designs, both as to plan and exterior elevations, it was thought better not to hamper the competitors in any way. Each competitor will therefore place the choir in such position as he may deem will give the best results architecturally and at the same time fulfil the wants of a Presbyterian congregation.

It is hoped that many of the abler young men in the profession will take this opportunity to attempt to solve the problem of fulfilling the wants of a Presbyterian congregation, and at the same time designing a thoroughly ecclesiastical building.

MONTREAL CONTRACTORS' ASSOCIATION.

THE members of this Association wisely make use of the "dull season," between the close of business activity in the fall and its commencement in the spring, to cultivate a feeling of sociability which must greatly tend to secure union of interest and purpose. The custom of having a sleigh drive and banquet, which has prevailed for several years past, was adhered to this season.

A new departure made this year, however, took the shape of a trip to Boston, which was participated in by Messrs. E. A. Peel, President; W. Byrd, ex-President; Enoch Jones, Jas. Beckham, John Lee, J. W. Murray, Richard Ready, and about twenty others. A day was pleasantly and profitably spent in inspecting the public buildings, parks, and other objects of interest in Boston.

The annual drive and banquet took place on the 4th inst., and was as usual a thoroughly enjoyable affair, the credit for which belongs to the Committee of Management: Messrs. J. R. Lavignac, L. Consineau, A. Valiquette, V. Bastien, T. H. McKenna, C. T. Charlebois, J. Lambert, J. Cochrane, and F. Fournier. The company numbered 85, and occupied 32 sleighs.

The dinner, which was of excellent character, was presided over by the President-elect, Mr. J. Brunet, M. P. P. The usual loyal and patriotic toasts were duly honored, Mr. J. R. Savignac responded on behalf of Her Majesty the Queen. "Construction and its Interests" brought forth an appropriate response from Mr. J. Consineau. Speeches were also made by the President, and Messrs. J. Cochrane, J. Lambert, and Ald. Lamarche.

Canadian manufacturers of sewer pipe should note the fact that the town of Calgary in the Northwest is said to be importing its supplies from St. Louis.

THE PROPER METHOD OF JUDGING COMPETITIVE PLANS.

QUEBEC, Jan. 31st, 1891.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—As a subscriber to the CANADIAN ARCHITECT AND BUILDER, allow me to put before you the following questions:

In a competition for plans of building, is it right that one of the competitors sign his name to his plan? In such a case would it be right to have only one judge well known by competitors?

Is it not a well known rule that when a plan is signed it should be put aside?

In a case like the one described, do you think if the judge allowed the first prize to the signed plan, it should be considered a just and final decision?

An answer through your esteemed journal will oblige,

Yours respectfully,

D. OUELLETE.

[In answer to our correspondent's enquiries, the name of the author of a competitive design should not be attached to his drawings, and when so attached, such drawings should be ruled out as being informal. It would manifestly be unfair to allow a signed drawing to remain in the competition, and even more unjust to award to such drawing a premium. The competitors thus unjustly dealt with in a competition would have the right to insist upon the matter being reconsidered and adjusted in a proper and equitable manner.—EDITOR C. A. & B.]

TORONTO MASTER PLUMBERS' ASSOCIATION.

TWICE a year at least the members of the above organization and their friends count upon having a time of enjoyment, and up to the present they have not been disappointed. In the summer the festivities take the form of a picnic at some of the neighboring resorts, and in the winter a dinner.

The latter event took place this year at "The Hub" restaurant. The attendance was not as large as could have been desired, but there was no lack of enthusiasm and good-fellowship.

Mr. Joseph Wright, the newly-elected President, presided, and gracefully performed the duties of the position. There were present representing the other branches of the building trades—Mr. John Goddard; Mr. Wm. Simpson and Mr. Lockwood. The manufacturers and supply men were represented by Messrs. Forester, Bayles, and Barsman. Messrs. O'Neil and Kirk, plumbing inspectors, were also among the guests.

The remarks of the various speakers went to show that the benefits of association are felt to be great, nevertheless the fact was deplored that a larger proportion of the employers in the plumbing and other trades do not avail themselves of these benefits by becoming members and actively promoting the interests of the trades organizations.

Songs were sung at intervals during the evening by Messrs. Whitelaw, McEwen, Ritchie, Jr., Ritchie, Sr., and Sim.

OUR ILLUSTRATIONS.

"CANADIAN ARCHITECT AND BUILDER" COMPETITION FOR A CITY HOUSE—DESIGN BY "SOLEIL."

It is proposed that the foundations be built of stone; that bricks of a dark red color be used, laid in mortar to match; that all wooden walls be hung with red tiles, and that the roofs be all shingled.

"CANADIAN ARCHITECT AND BUILDER" COMPETITION FOR A CITY HOUSE—DESIGN SUBMITTED BY "AU REVOIR."

To carry out this design, the author would use the following material: The exterior basement walls to be of stone, the interior basement walls and all other external walls to be of brick, except first floor front, which should be of frame, sheeted both sides, inside to be battened on a layer af sheathing paper and to be lathed and plastered, exterior to be tiled on a layer of felt; gables in front to be plastered in panels formed by framing. Front elevation and chimney to be built of specially selected brick of a reddish brown tint; roofs to be boarded and shingled on a ½ inch layer of mortar, shingles to be untouched to turn grey by time and weather. Inside finish throughout to be of white pine and varnished, except staircase, which should be of hardwood. Exterior woodwork to be painted to harmonize with brick and tile.

RESIDENCES IN MONTREAL, QUE.—MESSRS. J. W. & E. C. HOPKINS, ARCHITECTS, MONTREAL.

ILLUSTRATIONS ACCOMPANYING MR. E. BURKE'S PAPER ON "SLOW BURNING CONSTRUCTION."

PUBLICATIONS.

The first original article by Count Tolstoï, that has ever been published in an American magazine, appears in the February issue of *The Cosmopolitan*, with a number of interesting photographic reproductions, one of them being a picture of Tolstoï guiding a plow in his Russian fields. Brander Matthews appears with his first article upon Some Latterday Humorists. The third in the series of colored frontispieces is a delightful sketch by McVickar, illustrating a character in Mrs. Van Rensselaer Cruger's new story, "Mademoiselle Réséda." Ex-Postmaster General James presents an article upon the Welsh in the United States, liberally illustrated by portraits of prominent men who are of Welsh extraction. Price 25 cents. Cosmopolitan Pub. Co., Madison Square, N. Y.

We observe that Hansen's patent chimney topping, manufactured at St. Johns, Que., by the Standard Drain Pipe Co., is being used quite extensively by Canadian architects. The article is undoubtedly a meritorious one, and deserves to be recognized as such.

The following gentlemen, of Montreal, are seeking incorporation for the purpose of constructing iron bridges; Messrs. George W. Parent, Alex. Lapierre, Edouard Lalonde, Joseph Brunette and Eugene Mauffette. The capital of the proposed company is $25,000.

The Boynton Wall Plaster & Cement Co. is the name of a new business organization which lately commenced operations at Kingston, Ont. The capital of the company is $100,000. The names of the provisional directors are: Hon. G. A. Kirkpatrick, C. F. Gildersleeve, J. Gaskin, J. Minnes, R. L. T. Strathy, J. Hewton and J. Newlands. Mr. Strathy is manager for the company and Mr. J. F. Swift, Secretary.

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P. LORTIE & SON,
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1933 Notre Dame Street, - MONTREAL.
Bell Telephone 1836. Federal Telephone 2207.

NOTICE.

Province of Quebec Association of Architects.

The Council of the Province of Quebec Association of Architects, having completed their organization according to the provisions of the Act passed at the last session of the Legislature incorporating said association, hereby give notice to all architects practising in the Province of Quebec, who desire to register under the said act, to do so, by writing the undersigned within six months from this date.

The registration fee is twenty dollars.

Notice and evidence of existing studentship must also be given to the Secretary within six months from the passing of the said act, accompanied by fee of three dollars.

CHRIS. CLIFT,
Secretary Province of Quebec Association of Architects.
180 Saint James Street,
Montreal, 21st January, 1891.

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AVIS.

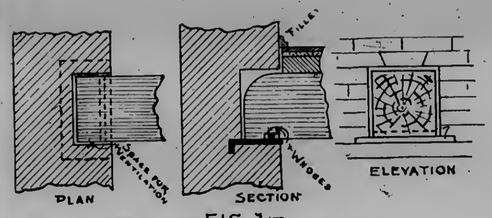
L'Association des Architects de la Province de Quebec.

L'Association du Conseil des Architects de la Province of Québec, ayant complété leur organisation suivant les dispositions de l'acte passé à la dernière session de la Législature, incorporant la dite association, donne avis par le présent à tous les architectes, pratiquant dans la Province de Québec, qui désirent s'enregister en vertu du dit acte, d'écrire au soussigné sous six mois de cette date.

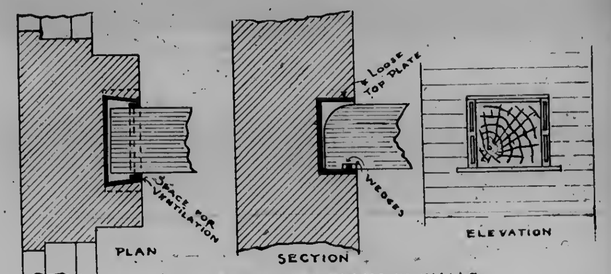
Les frais d'enregistrement sant de vingt piastres.

Avis et preuve du temps d'étude doivent être donnés au secrétaire sous six mois de la passation du dit acte, accompagnés des fruis de trois piastres.

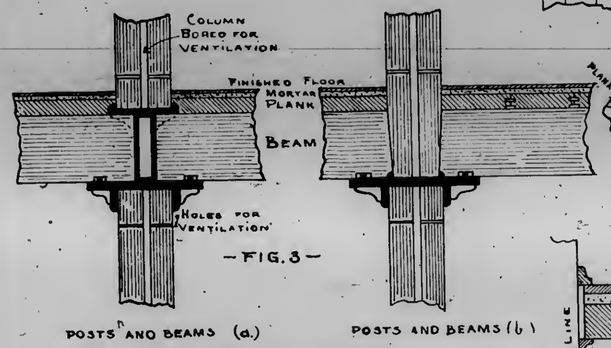
CHRIS. CLIFT,
Secrétaire de l'Association des Architectes de la Province de Québec.
180 rue Saint Jacques,
Montréal, 21 janvier, 1891.



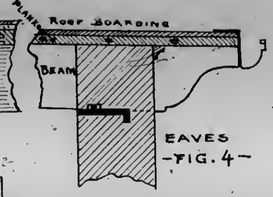
-FIG. 1-
ANCHORAGE FOR BEAMS IN WALLS



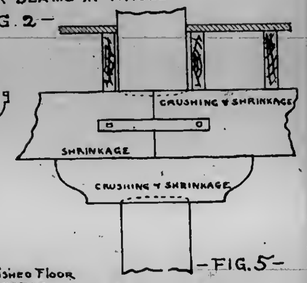
ANCHORAGE FOR BEAMS IN WALLS
-FIG. 2-



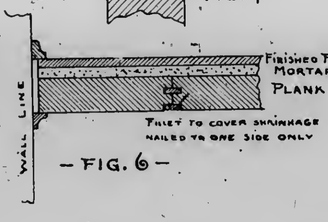
-FIG. 3-
POSTS AND BEAMS (a.) POSTS AND BEAMS (b.)



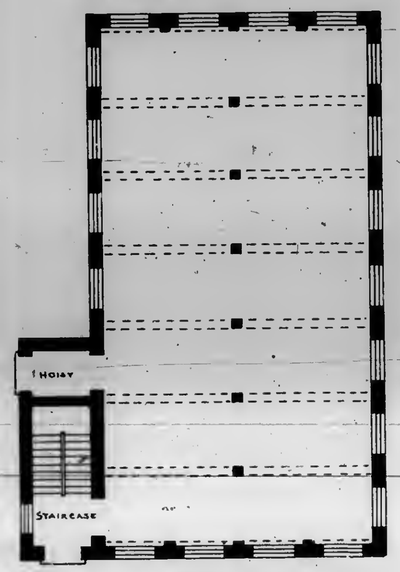
EAVES
-FIG. 4-



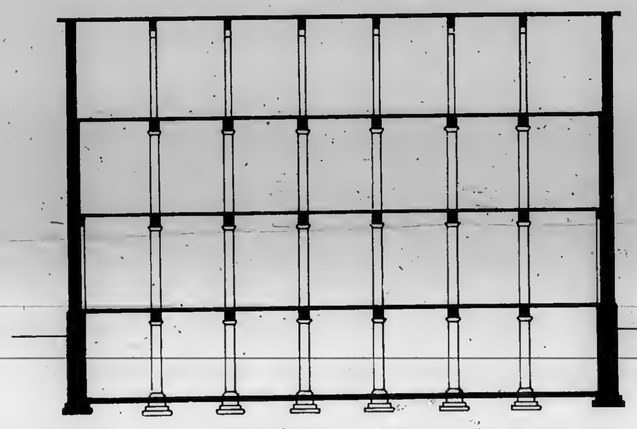
-FIG. 5-
THE OLD METHOD



-FIG. 6-

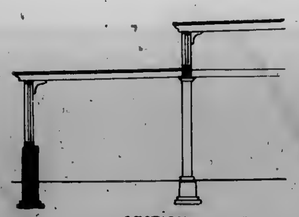


PLAN -FIG. 7-



LONGITUDINAL SECTION -FIG. 8-

-FIG. 9-



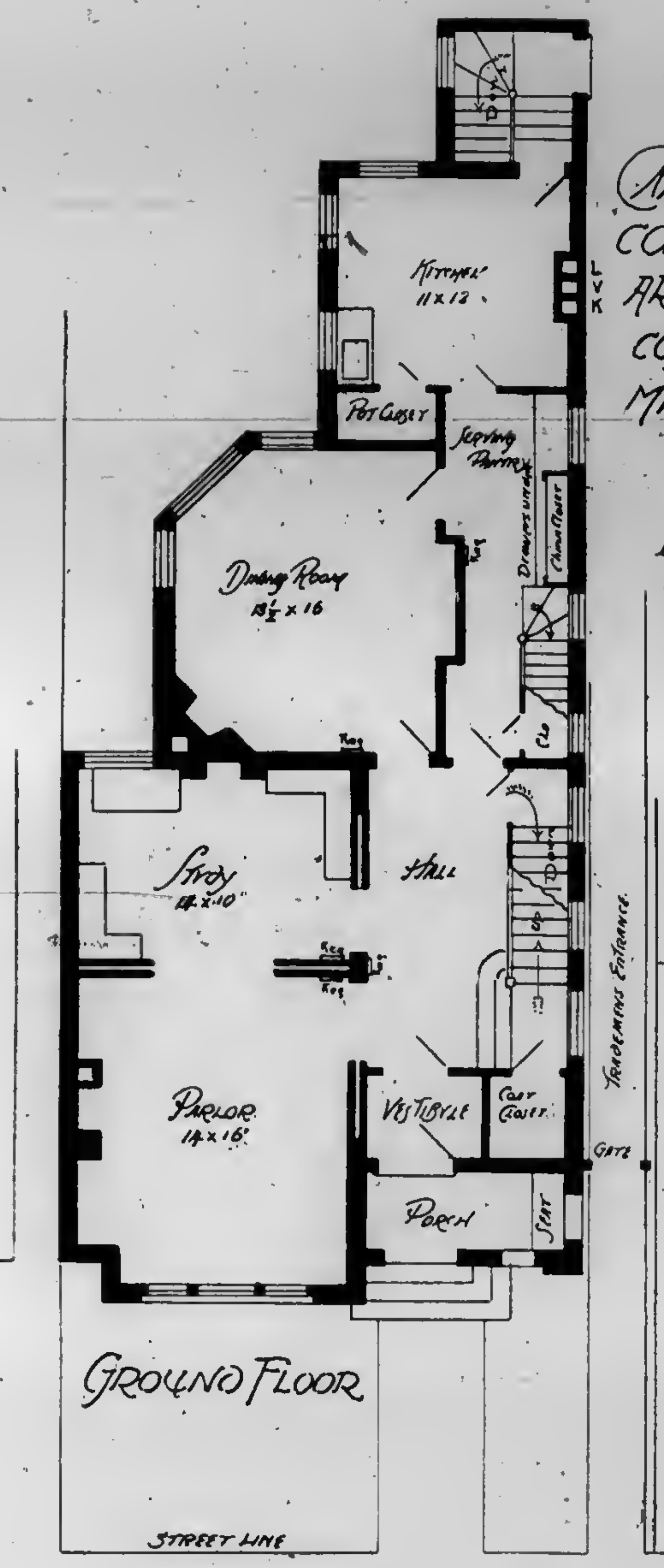
SECTION

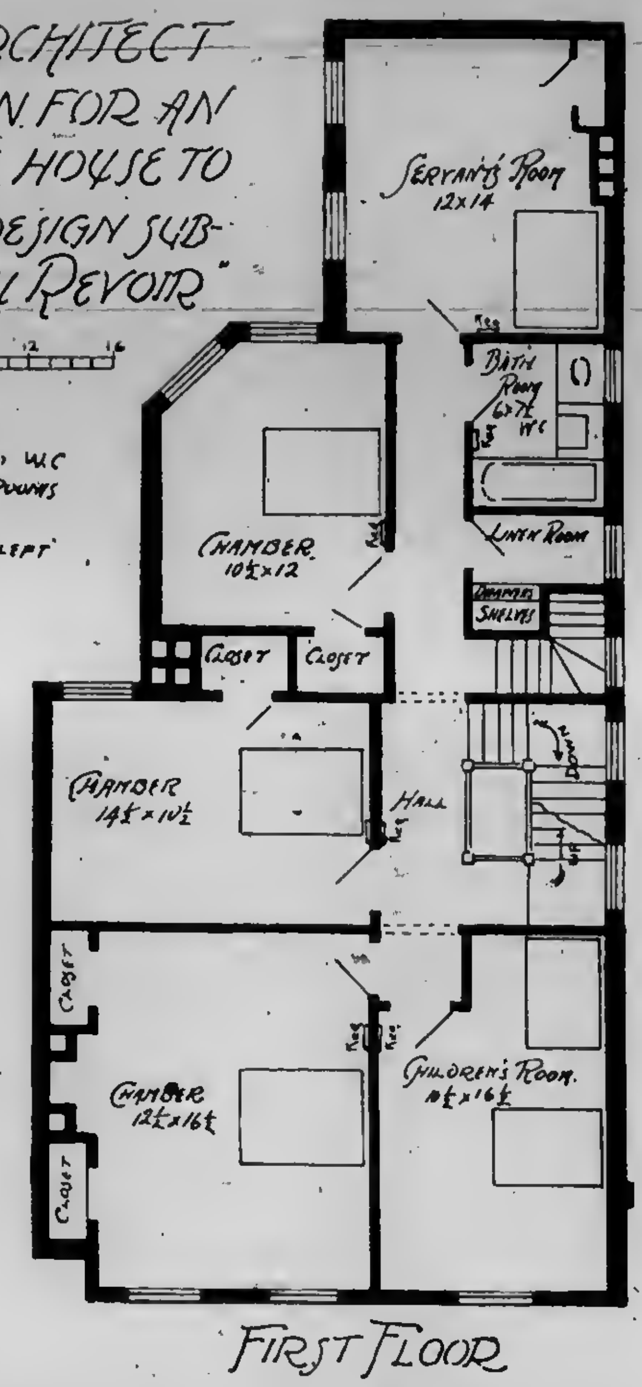
PART SIDE ELEVN (WOOD POSTS ABOVE W. SILLS) PART SIDE ELEVN (BRICK WALL CARRIED TO ROOF)

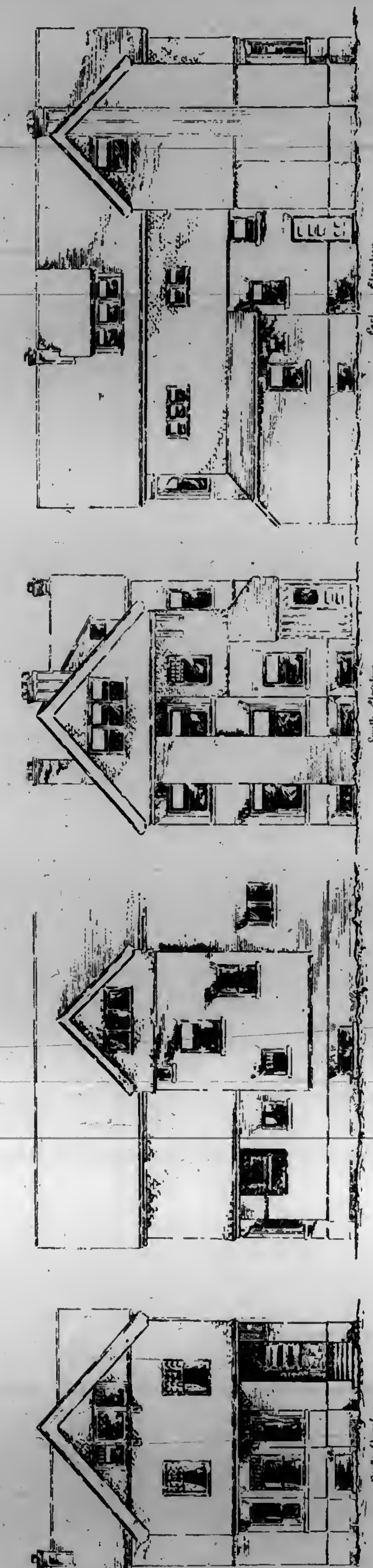
DRAWINGS
IN ILLUSTRATION OF
MR. E BURKE'S PAPER
ON
SLOW-BURNING CONSTRUCTION

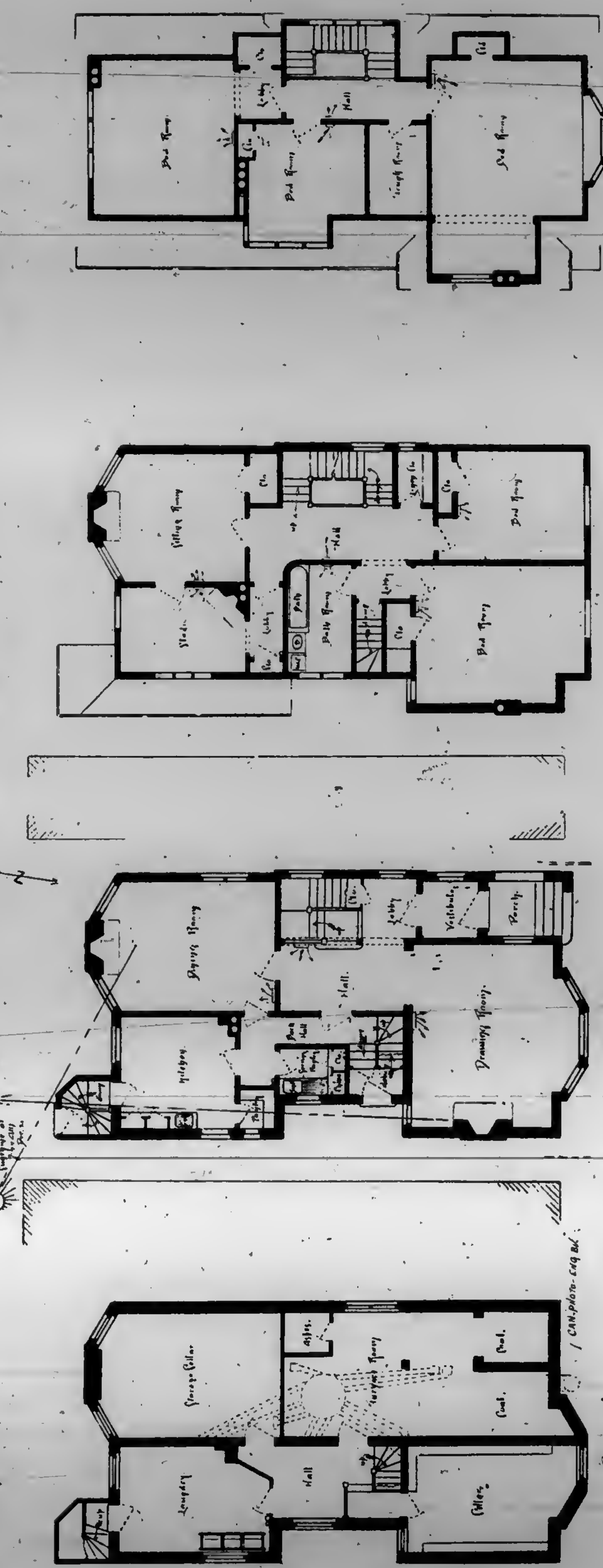
CANADIAN ARCHITECT COMPETITION FOR AN ARCHITECT'S HOUSE TO COST $4500 DESIGN SUBMITTED BY "AU REVOIR"

LAUNDRY. STORE ROOM, W.C. FURNACE AND COAL ROOMS IN BASEMENT. TWO ROOMS IN ATTIC LEFT UNFINISHED.

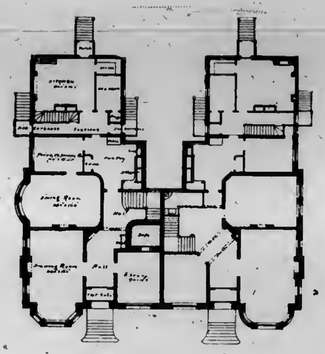




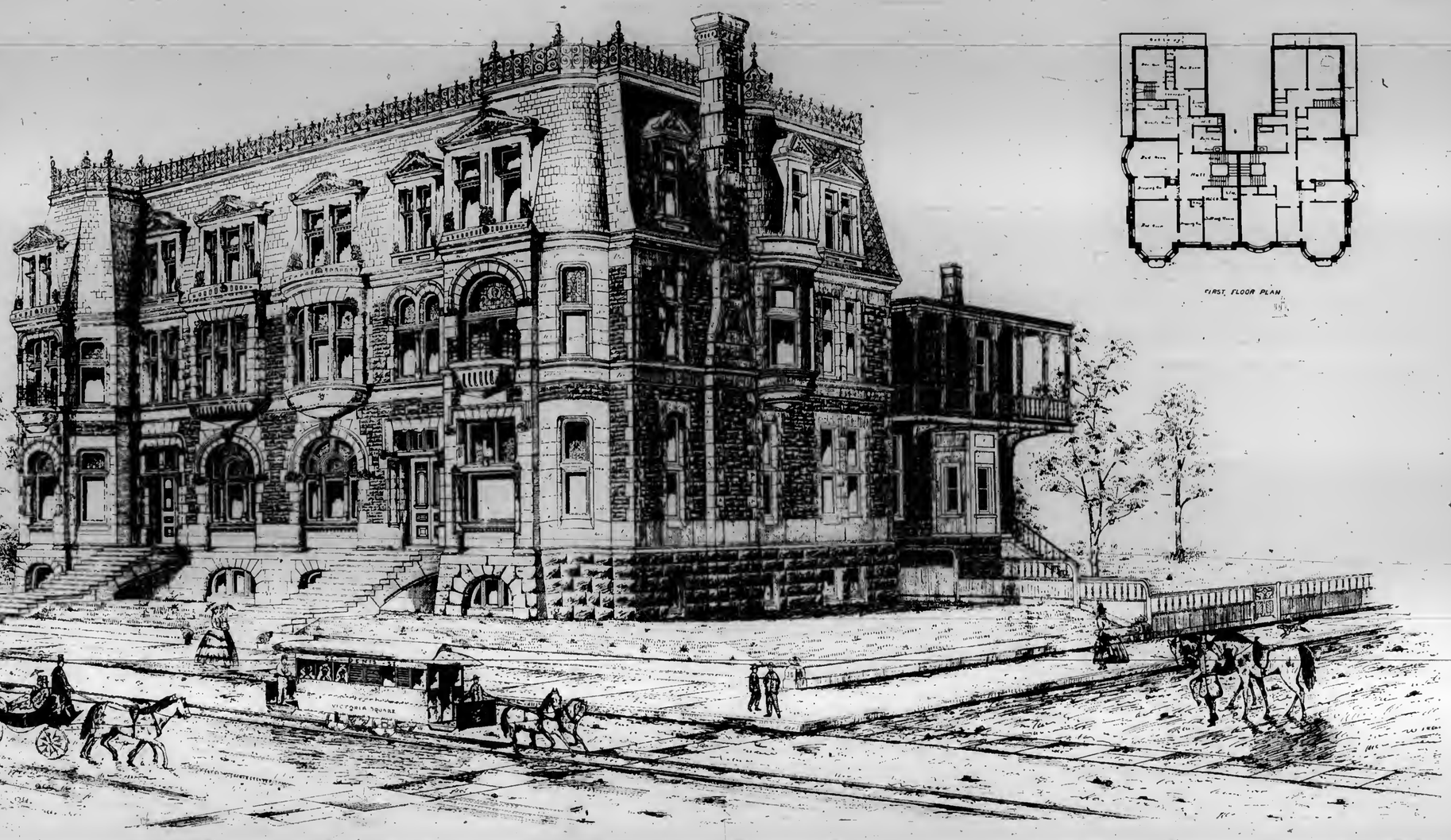




C A and B Competition for a City House. Submitted by "Soleil"



GROUND FLOOR PLAN



FIRST FLOOR PLAN

RESIDENCES, MONTREAL, QUE.

MESSRS. J. W. & E. C. HOPKINS, ARCHITECTS, MONTREAL.

CANADIAN ARCHITECT AND BUILDER.

VOL. IV.—No. 111. TORONTO AND MONTREAL, CANADA, MARCH, 1891. { PRICE 20 CENTS $2.00 PER YEAR.

—THE—

CANADIAN ARCHITECT AND BUILDER,

A Monthly Journal of Modern Constructive Methods,

(With a Weekly Intermediate Edition—The CANADIAN CONTRACT RECORD),

PUBLISHED ON THE THIRD SATURDAY IN EACH MONTH IN THE INTEREST OF

ARCHITECTS, CIVIL AND SANITARY ENGINEERS, PLUMBERS, DECORATORS, BUILDERS, CONTRACTORS, AND MANUFACTURERS OF AND DEALERS IN BUILDING MATERIALS AND APPLIANCES.

C. H. MORTIMER, Publisher,

14 King Street West, - TORONTO, CANADA.

62 TEMPLE BUILDING, MONTREAL.

SUBSCRIPTIONS.

The CANADIAN ARCHITECT AND BUILDER will be mailed to any address in Canada or the United States for $2.00 per year. The price to subscribers in foreign countries, is $2.50. Subscriptions are payable in advance. The paper will be discontinued at expiration of term paid for, if so stipulated by the subscriber; but where no such understanding exists, will be continued until instructions to discontinue are received and all arrearages paid.

ADVERTISEMENTS.

Prices for advertising sent promptly on application. Orders for advertising should reach the office of publication not later than the 12th day of the month, and changes of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The "Canadian Architect and Builder" is the official paper of the Architectural Associations of Ontario and Quebec.

The publisher desires to ensure the regular and prompt delivery of this journal to every subscriber, and requests that any cause of complaint in this particular be reported at once to the office of publication. Subscribers who may change their address should also give prompt notice of same, and in doing so, should give both the old and new address.

THE competition for the proposed new City Hall at Quebec has resulted in the usual fizzle. Three plans received prizes and the other three were bought for $300 each. And now one of the competitors is handed all six sets of plans with instructions to draw up new plans embodying the best points of each, the whole to be done under the superintendence of the city engineer. And so it goes on. When will the profession awake to a sense of their humiliating position, and insist, as a condition of their entering a competition, that a proper code be drawn up and that competent judges be appointed.

IT was rather late in the day for the Canadian competitors for the Montreal Board of Trade building to cry out about the alleged unfairness of the award. If they had heeded the advice of both the Ontario and Quebec Associations they would have been spared the trouble and expense which they were put to without hope of reward, and would have helped to sustain these Associations in their protest against the unfair clauses in the conditions of the competition. We must say we have no sympathy with these disgruntled parties, some of whom probably thought they had seized a golden opportunity, when their more competent brethren had decided to hold themselves aloof.

THERE seems to be a persistent effort in certain quarters to create a sentiment in favor of operating the Toronto street railway by the civic authorities. To our mind the simplest solution of the problem seems the best, viz., *the city to own the road-bed only.* By this means all questions of repairs, best form of tracks, curves and switches, etc., is in the hands and under the sole control of the city. The city would then be in a position to grant running powers over certain sections to more than one company. It is certain that as the city grows new routes will be developed. These new routes will require access to the heart of the city (as witness already the application of the Metropolitan and the Toronto and Weston companies) and it will never do to grant an independent right of way to each, as down town streets are already more than monopolized to the detriment of vehicular traffic. It has generally been the case, when the company constructs the road-bed, that development slowly follows the growth of population, whereas, if in the hands of the city, development could be made in certain desirable instances to proceed and attract population. The civic authorities could make all needful regulations as to service, speed, frequency, over-crowding, fares, extensions, motive power, location of stables or power houses, method of application of power, position of wires or cables, rent of tracks, and in fact everything necessary to insure the establishment of a model system, with the minimum of trouble and responsibility on the part of the city.

WE are pleased to notice that an effort is being made by the City Engineer of Toronto in regard to the control or inspection of projecting signs, with a view to the safety of the public. We would go further—abolish them, and that other hideous deformity, the wooden verandah or shed which covers so many of our shop fronts. For our part we cannot understand how civilized beings with the slightest claim to the possession of taste in regard to the architectural appearance of their shops and warehouses can for a moment consent to have the fronts of these buildings disfigured and bedaubed as they are wont to be. No. 1 builds a pretentions front, and lavishes his money on terra cotta, pressed brick or cut stone. He no sooner assumed possession and bid good bye to his architect, than he hoists a great board abomination in front of and covering hundreds of dollars worth of ornament. No. 2 must do something to attract the public gaze from No. 1, and so procures a V shaped structure projecting away out into the street and secured to the light woodwork of a window frame or cornice with equally light rods and bolts which the first hurricane will wrench and hurl to the pavement, to the danger of the pedestrians beneath. No. 3, not to be outdone, concocts something bigger and more atrocious, and so it goes on from bad to worse. Could we not have a by-law forbidding all projecting signs? Surely the *street* does not belong to these people, and if they *will* have ugliness, why not compel them to keep off the street line with it? We would be glad to see a commission of public censors appointed, with authority to compel some attention to taste in such matters. Our citizens and visitors would soon notice a wonderful change for the better in our business fronts, and the shop-keepers themselves would be constrained to admit that it was a good thing that they were saved from their own abominations.

THE National Association of Master Builders, of the United States, now a well-organized body, held its fifth annual convention in New York last month. One hundred and sixty one delegates were in attendance, representing some thirty-five cities scattered from the Atlantic to the Pacific Coast. In addition to the regular delegates, the alternates and visitors make up a list of over five hundred. Some important business was transacted. The Committee on Arbitration reported, advocating the settlement of disputes between employers and employees by referees. We are glad to see such an influential organization put itself on record in regard to this most important question, and although no very definite rules were recommended, an important step has been taken which ought to bear good fruit in the course of time. No doubt each year will see some practical detail added in improvement to the suggestions already put on record. The uniform contract, adopted at a former convention, and looked upon as nearly perfect by a complacent committee, had apparently no clause making the contractor responsible and holding the owner harmless for all accidents, damages, &c., through the carelessness or neglect of the former. No wonder lawyers flourish when such looseness in drawing up contracts prevails. The Trade Schools in New York and Philadelphia were visited by the delegates, and the object lessons thereby presented ought to bear good fruit. The leading men in the convention have expressed themselves as convinced that the best and most permanent work which may be accomplished by the Association will be the education of workmen by means of such schools. The quality of the work done by the pupils was a matter of astonishment to those who had not been cognizant of the standard set up by these institutions. The master builders of the Dominion of Canada would do well to imitate their brethren across the line. A Dominion

Association would prove of incalculable good if developed on right lines and with a broad policy looking to improved methods of building, the improvement of their workmen, and rational methods of settling disputes.

THERE have been in use in the large cities of the United States for some time various systems of automatic fire-alarms for stores, warehouses, etc. Some of these are now being brought forward in this country, and it is usual for the insurance companies to make some inducement to their clients when they are employed. When the alarm gong is located in the room or residence of an employee, or some other person connected with the concern, they would no doubt serve a useful purpose. It has been the practice in some cases to connect the building by means of a wire with the nearest fire station, but such a method cannot be too strongly deprecated. To do this it is necessary to sneak a wire over house tops or by some similarly devious route. This wire is liable to be a continual trouble. On the one hand, too much reliance may be placed on its being in order, and necessary vigilance in other directions relaxed, when through some cause it is incapable of transmitting a signal; and on the other hand, a false signal may be sent in, causing the brigade a run for nothing. This would not be of much moment except for the fact that some day a genuine alarm might be sent in, and on account of the previous cries of "wolf" when there was no wolf, a fatal amount of credulity might be attached to the warning. A preferable plan would be to place a continuous ringing gong on the outside of the house itself to call the attention of all and sundry to the fact that something was wrong within. The action of the sun on a flat roof has frequently been the means of sending in an alarm of fire when the thermostats have been closely adjusted; and if they are not closely adjusted, a fire might make considerable headway before notice was given. The proposal to connect these thermostats with the nearest fire alarm box to spring the alarm from the box, cannot be too strongly condemned. The less complication there is about a city fire alarm system the better, and the more likely it is to remain in working order when actually needed. The automatic fire alarm is good in its place, and might frequently be the means of saving a large amount of property, but keep it separate from the municipal system by all means.

THE RECENT O. A. A. CONVENTION.

THE Convention of the Ontario Association of Architects closed so near the time of going to press last month, that we had not the opportunity to say all we desired with reference to it. The tone of the whole proceedings indicated that the Association had settled down to solid business, and that the members were beginning to realize their position as an incorporated body, with the responsibilities connected therewith.

The address of the President, Mr. Storm, was concise and business like, reviewing the history of the Association up to date, and dwelling specially on the fact of incorporation having been obtained during the past year. If every architect would live up to the standard enunciated in the closing sentences, the profession would be one to be truly proud of, and would rank as it ought, and we hope soon will, with the other learned professions.

It was a source of great gratification to know that the incorporation of the Ontario Association was so quickly followed by that of the Quebec Association, some nine months only intervening. The incorporation of the latter was of course easier of accomplishment than the former, as it had the action of the Ontario Legislature for a precedent, while the pioneer Association had to vigorously wrirk up their claims in the face of the absence of all precedent, being the first organization of the kind to receive incorporation.

It will now be in order for the two Associations to close up their ranks and work shoulder to shoulder with the object of ultimately obtaining such legislation as will permit only thoroughly qualified men to designate themselves "Architects."

The holding of the Convention in the School of Practical Science was a good idea, and the members availed themselves largely of the kindness of Prof. Galbraith and of Mr. Wright, the lecturer in the Architectural Department, who conducted the visitors over the building and explained the workings of the various departments. The equipment, which is still comparatively incomplete, will probably be in full working order by the next convention. The School and the profession will undoubtedly in the days to come be mutually helpful. The theoretical of the former blending with the practical experience to be gained in the offices of the latter, should combine to produce well rounded and thoroughly competent men in the near future.

An interesting discussion arose out of a resolution requesting the Council to prepare a form of certificate for the use of members of the Association. The discussion naturally ran into the question of the architect's responsibility in the matter, some speakers suggesting that the words "I hereby certify," &c., were too positive and committal, and that the words "To the best of my knowledge" should be put in as a safeguard. The resolution was lost after a vigorous summing up by the President, who took a manly view of the subject, saying, "I don't think any of these suggestions * * * are favorable to us as a profession. If we undertake a certain duty, and we have certain responsibilities, we should shoulder them fairly and properly. If we issue a certificate it should show in its face what it is worth. It is as much as to say: 'I am satisfied that the work has been done so far, and that man is entitled to so much money.' Take that responsibility, and hold it, and stand by it."

The question of an Association code which would govern the conditions of competitions entered into by members, caused a discussion which will no doubt be of benefit to some who are inclined to be weak-kneed. The Council was instructed to draft a code for future consideration, and will doubtless bring forward one which will be of great benefit alike to the public and the profession.

The chief points of discussion brought out by the reading of Mr. Bousfield's paper on "Architectural Education," were in reference to the draft curriculum which is being formulated by the Council. The trend of the debate indicated a decided desire on the part of members for an ultimately high standard of qualification, while not at present being too severe upon the students who have not had the opportunity or means to fit themselves for the coming examinations.

It seemed to be a matter of considerable surprise to the members when they were told in the Registrar's report that there were 140 names on the roll. This number must certainly embrace almost every practitioner in the Province. If it does, and even if not; it is evidence that the Association may become a power in the land—a power for good to themselves and also to the public.

If the Association is true to itself and to the traditions of a noble Guild, it cannot help but raise the standard of professional ethics, improve the building art both in matters of construction and design, and increase the respect, esteem and confidence of the public.

ESTIMATES WANTED.

THE publisher of the CANADIAN ARCHITECT AND BUILDER will pay $20 in cash to the subscriber who sends to this office on or before the first day of May next, the most complete, most accurate and best arranged bill of quantities taken from the measured drawings of a residence published in this paper. The competitor who is awarded second position will receive a copy of the CANADIAN ARCHITECT AND BUILDER free for the term of one year.

The drawings upon which estimates are invited are those of a residence which has actually been built. They are accordingly practical, and the judges of the competition will have the advantage of being placed in the possession of all the data concerning the cost of the work.

Accompanying the drawings will be found complete specifications, with explanatory sketches where required.

In judging this competition regard will be had to perspicuity of arrangement of items, and the value of the schedule submitted as a practical guide to contractors who desire to be made acquainted with the most simple and accurate method of arriving at estimates of cost.

Competitors taking part in this competition must be subscribers to the CANADIAN ARCHITECT AND BUILDER.

Competitors must send in their bills of quantities signed only with a *nom de plume*, and must forward with them a separate, sealed envelope, containing their *nom de plume*, together with their actual names and addresses.

This competition is designed to result in practical benefit to contractors and architectural students in particular.

To the hap-hazard methods of estimating in use by the majority of contractors in Canada to-day, in lieu of methods based upon well-defined rules, can be traced the otherwise inexplicable variation of tenders, often ranging to 50 and 60 per cent. In the light of such wide variation, it may be a matter of regret, though not of surprise, that contractors find it so difficult to make a profit, and that every year so many of them go to the wall. It is with a view to assist contractors to estimate on a proper basis, and thus to avoid working to no profit, if not to actual loss, that this competition has been arranged.

It is hoped also that it may prove a help to architectural students, who will be called upon to present themselves for examination in this and other subjects.

Mr. Langley, of the firm of Langley & Burke, architects, Toronto, and Mr. Brown, of the firm of Brown & Love, contractors, have kindly consented to act as judges, their decision will and be final.

Let the interest manifested in this competition by contractors, students, etc., correspond to the importance of the subject, and the result should be highly satisfactory and valuable to every reader.

PROVINCIAL LAND SURVEYORS.

THE convention of the Association of Provincial Land Surveyors, held in Toronto a fortnight ago, was one of interest and profit. The address of the President, Mr. Sankey, showed that during the six years since the Association was organized, forty papers on various subjects have been presented to the members. The question of incorporation is now the most important one engaging attention. A movement is also on foot with the object of affiliating the various Provincial Associations with the Dominion Association. The officers elected for the current year are as follows: President, Villiers Sankey; Vice-President, E. Stewart, Kincardine; Secretary-Treasurer, A. J. VanNostrand; Councillors, H. B. Proudfoot, M. Gaviller, T. H. Jones, James Dickson, H. J. Bowman, M. J. Butler, H. D. Ellis, C. Unwin, J. C. McNabb, W. R. Aylesworth; Scrutineers, T. B. Speight and F. L. Foster.

QUEBEC.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

MR. J. F. PEACHY, architect, has been authorized to prepare plans for the proposed new city hall, appropriating any good points he may find in the designs submitted in the late competition, in which Mr. Peachy was also a prize winner. The owners of designs not awarded prizes have allowed the city to retain their plans, the latter paying each competitor $300.—Mr. Charest, who was awarded 1st prize, has since then been appointed architect in the Public Works Department; Mr. P. Cousin of that Department has resigned, and entered upon private practice.

Work on the skating rink, the re-construction of which has been delayed for nearly two years owing to some misunderstanding between the directors and the Federal Government, is to be started as soon as the weather permits. It is to be of the same size as the former rink, the roof arches of which are to be used again. The general plan is being entirely changed, some new features, including a curling rink, being introduced. The contract has been awarded for $10,000 to Geo. Boiteau; H. Staveley, architect.

Mr. Raymond, architect, has given out contracts for a wholesale store on St. Paul street for Messrs. Dupuis, probable cost $15,000.

Several private residences and some stores are talked of for St. John street, but at the time of writing the elections are so absorbing that nothing else receives much attention.

The "Fortress Hotel" Co. received tenders for their proposed new building on 19th ult. The lowest tenderers are Quebecers. Several Montreal and one Brockville contractor also made bids. The plans upon which tenders were called were those made by Messrs. Rotch & Tilden, Boston. The cost of building, when entirely completed, will probably reach $220,000. No tender has so far been accepted.

The Roberval Hotel at Roverval, Lake St. John, is being largely increased in capacity by the addition of two new wings, besides another building containing billiard room and bowling alley; the hotel, with the additions, will comprise about 150 bed rooms. The new dining hall, to be finished in spruce, will have seating capacity for 160 persons. The building is being constructed by day work, with Mr. Leggs as superintendent, from plans prepared by H. Staveley, architect.

The Florence proprietor is also increasing his accommodation by the addition of a 5th storey to the north wing of his establishment. Mr. Trudel, we believe, always acts as his own architect.

PERSONAL.

Mr. F. H. Berlinguet, architect, Quebec, left that city for Europe, on the 11th inst.

Ald. Hanley, a leading contractor of Belleville, Ont., paid the ARCHITECT AND BUILDER a visit a few days ago.

Mr. Henry J. Powell, architect, of Tilbury Centre, has succeeded to the practice of the late Mr. J. R. Kilburn, of Stratford.

Mr. M. Demers, a popular contractor of Montreal, was presented by his friends a few evenings ago with a gold watch and chain.

Mr. D. B. Dick, architect, Toronto, will give an annual prize for proficiency in the first year to students in the architectural course at the School of Practical Science.

The CANADIAN ARCHITECT AND BUILDER was recently favored with a visit from two of the oldest and most esteemed contractors of Hamilton, Ont., Mr. John Webb and Alderman Hancock.

The CANADIAN ARCHITECT AND BUILDER desires to extend to Mr. Theo. Daoust, architect, Montreal, hearty congratulations in view of the matrimonial contract into which he recently entered.

Messrs. Darling & Curry, architects, Toronto, have recently taken into partnership Messrs. Sproatt & Pearson, also of that city. The firm name has been changed to Darling, Curry, Sproatt & Pearson. Extensive additions, alterations and improvements are being made to Darling & Curry's offices in the *Mail* Building, to meet the requirements of the new firm. Every modern contrivance calculated to systematize and facilitate operations will be utilized in the new offices, which, when completed, will be second to none in the Dominion.

TORONTO ARCHITECTURAL SKETCH CLUB.

THE members listened to a paper of unusual interest on Tuesday, 24th inst., given by Mr. G. A. Reid, R.C.A. The subject was "Architecture from an Artist's Standpoint." Mr. Reid showed his appreciation of architecture by the many clever points made during the course of the evening, his numerous sketches in oils and pastelle bringing the subject before his audience in a very lucid and pleasing way. It is intended to publish the paper in full in the CANADIAN ARCHITECT AND BUILDER for April, illustrated by pen and ink drawings by Mr. F. S. Challener from the original sketches.

An interesting discussion followed the paper, in which Messrs. Darling, Sam Jones, Curry, Simpson, Gregg and others took part.

The competitive drawings for "A Stone Mantel" were then criticized by Mr. Frank Darling in his usual facile manner, Mr. E. B. Jarvis being awarded first place in the senior division, and Mr. Ernest Rolph first place in the junior division.

It is a fact for congratulation to the Club that it has to a large extent the co-operation of the architects in its work, and especially so that a number of the younger architects enter the competitions. It is hoped in time that more will be induced to go in for them, as it is one of the primary objects of the Club that this should be so. The impression that the competitions ought to be restricted to draughtsmen and students is entirely erroneous and utterly incompatible with the feeling of the constitution.

At this meeting it was resolved by a majority vote of those present that the regular meetings should be held on Monday instead of Tuesday as heretofore, and in accordance with this, the next meeting was held on Monday, 9th inst. Mr. W. A. Langton gave a clever paper on "Richardson and His Works," which was listened to attentively by all present. At the close quite a lively discussion took place. As Mr. Langton spent a number of years in Mr. Richardson's office in Boston, he was well prepared to speak on the subject, and did so in a most interesting manner, receiving a hearty vote of thanks for his trouble.

OUR ILLUSTRATIONS.

"CANADIAN ARCHITECT AND BUILDER" COMPETITION FOR A CITY HOUSE—DESIGN SUBMITTED BY "HIS ASPIRANT" (MR. MURRAY WHITE.)

The basement walls to be carried up to ground line in good rubble masonry, composed of the best quality of an approved stone, well bonded, laid in the best prepared mortar, and the joints, both inside and outside, to be struck with the trowel. The stonework above ground line to be of the best approved local stone, built in courses, to be neatly pointed and well bonded. The sill and head courses to be neatly tooth chiselled. Brick walls in basement to be built of hard clinker bricks. The walls from the stonework up to the first floor joists to be built of the best selected red bricks of a uniform color, laid English bond in mortar, stained in dark brown. Above ground floor the exterior walls are to be composed of 4 in. studding, shaded both sides with matched sheeting, and lined on inside before battering with a double thickness of sheathing paper. When parts are to be tiled, the best approved tiles are to be used, of a rich, dark red color; the gables to be lathed and plastered, one coat to go entirely over surface before strips are nailed on; plaster to be stained a dark brown color. The lumber throughout to be of good clear pine, and flooring to be selected free from knots, etc. The hall, dining room and parlor to be finished in black ash, oiled and varnished; the rest of interior finish to be of clear pine, stained and oiled.

TORONTO ARCHITECTURAL SKETCH CLUB COMPETITION FOR STONE MANTEL—DESIGN BY MR. EDGAR B. JARVIS, AWARDED FIRST POSITION.

SCHOOL HOUSE AND ASSEMBLY HALL AT THE BOYS' INDUSTRIAL SCHOOL, MIMICO—HENRY SIMPSON, ARCHITECT, TORONTO.

PLANS, ETC., IN CANADIAN ARCHITECT AND BUILDER COMPETITION FOR BILL OF QUANTITIES.

THE R. C. A. EXHIBITION.

THE Royal Canadian Academy exhibition has attracted considerable attention, and copious comments and criticisms have appeared in the daily papers with atrocious attempts at illustration. The anticipations formed by the reading of some of these criticisms are rudely shocked in many cases when the spectator finally reaches the gallery and sees for himself. One cannot help feeling that their remarks are in some cases tempered by personal or other interests. It would be refreshing to have an estimate of the exhibition as a whole and a critique of the individual efforts from some authority, unbiased and competent.

The architectural exhibit is snugly ensconced in the Secretary's den, and modestly greets the persistent seeker after architectural art. It is well that it is thus enshrined, as the baker's dozen representing our glorious art would be hopelessly lost were it placed in one of the larger rooms.

We must confess to a feeling of real disappointment when we finally reached the sanctum. The sketches of a residence on St. George street by Mr. Townsend, two designs for churches by Messrs. Strickland & Symons, and a view in Ghent, Belgium, by Mr. Andrew Taylor, were the only numbers which could be singled out as even fairly rendered. Mr. Taylor's design for a residence had the fault of being stiffly inked in before being colored; his Branch Bank of Montreal did not err in this respect, but lacked all attempts at light and shade. Mr. Storm's perspective of the new Victoria College is somewhat effective when viewed at a distance, but coarse and rough when studied near enough to take in the design. The rendering of two houses by Messrs. Gordon & Helliwell and Mr. Taylor's Technical College Building is scratchy and devoid of light and shade. On the whole one cannot help feeling that there is a want of imagination betrayed by the majority of the exhibitors, and that many old friends are still playing on the same string as of yore—their trees, their rocks, waves and beaches, their homely human beings are the same old acquaintances.

The finer kind of coal ashes from domestic fires make excellent cement when used with common lime, the cement being four or five times as strong as common mortar. Those from steam boilers seem to be of sand in ordinary lime mortar made at too high a temperature for this, but can be used in ware.

ERRATA.

TORONTO, Feb. 25th, 1891.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—I congratulate you on the expedition shown by your staff in turning out so rapidly your February number, notwithstanding the large mass of extra matter; and as stenographer of the Convention, I am delighted with the accuracy with which your compositors have done their work. However, as architects are noted for accuracy in detail, it is due to them that you allow me to correct two small errors. One is the insertion on page 17, line 6, of the name of Mr. Gambier-Bousfield as speaker. Remarks attributed to him should form a continuation of Mr. Gouinlock's. The other error is a very slight one on page 21. In the middle of my remarks, the word *Burring* would no doubt puzzle your readers, who know no one of that name. The word should be *Bunn-y*. This is a case of the compositor "taking the bun," and thus spoiling the pun.

Fraternally,

THOS. BENGOUGH.

WORKS OF PALLADIO AND VIGNOLA.

MONTREAL, March 7th, 1891.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—In one of the works of Gwilt's "Rudiments of Architecture" there is a paragraph on page 120 which says "Palladio and Vignola the restorers of genuine architecture, are the authors whose works will be consulted with greatest advantage by those who desire to make any advance in the science, and most particularly by those who wish to obtain further knowledge on the use and abuse of its detail." Would you kindly give me the names of their principal works in the next number of the C. A. & B. and oblige,

Yours truly,

EUGENE PAYETTE.

[Palladio's four books translated by G. Leoni, 1726, or I. Ware, 1738, (both folios) will probably give our correspondent all he requires. They are, however, expensive. Both authors have produced valuable works on the "Five Orders of Architecture," a translation of one of Vignola's being called "The Regular Architect, or the General Rule of the Five Orders of Architecture," 1669. But most of these books are rare.—ED. C. A. & B.]

COMPETITIONS.

QUEBEC, March 12th, 1891.

Editor CANADIAN ARCHITECT AND BUILDER

DEAR SIR,—In the February number of your journal you published the following answers to certain questions from a Quebec correspondent: "The name of the author of a competition design should not be attached to his drawings, and when so attached, said drawing should be ruled out as being informal. It would manifestly be unfair to allow a signed drawing to remain in the competition and even more unjust to award to such a drawing a premium."

I am disposed to believe that in answering thus to your Quebec correspondent, you merely had a desire to express a personal opinion as to the way competitions ought to be carried out, and that in no way did you wish to impress upon your readers that there existed fixed and accepted rules for competition, and which were always followed.

With the majority of members of the profession I am of the opinion that it would be a good thing for us to have such rules, which would insure a uniform method of calling competitions and of judging them. But Mr. Editor, since there exists at present no such accepted and uniform rules, those calling a competition are quite free, it would seem, to draft anything they like or may think proper in the way of instructions to the competing architects. We cannot, therefore, and have not any fixed method to impose upon any one in this matter.

Supposing, for example, (a thing which is quite possible and even probable according to me) that the queries of your Quebec correspondent apply to a *real case*, and that the instructions issued to the competitors do not justify the answers as given by you, what then? Is not such a thing possible? I maintain that it is, and moreover, that the judge or judges in a competition are to be guided in their duty *solely by the instructions issued to the competitors* so far as the admission or putting aside of plans is concerned, and on the points on which a decision is to be given. We know of a competition for a certain public work, unfinished yet, and which has involved the expenditure of several millions, where the instructions to the competitors made no mention about using a motto or signing their plans: and the plans were all signed.

Now if similar instructions were issued in the case of your correspondent, and *one* of the competitors made use of a motto, does he thereby invalidate any or all other plans which may have been signed by their authors? If so, there would be risk sometimes of awarding first premium to the plan which least conformed to the needs contained in the instructions.

I've been a little long perhaps, but the question of competitions is an interesting and many sided one, on which there exists a number of different opinions among members of the profession, not only here in Canada but on the Continent also, as may be seen by frequent correspondence and editorials in the professional journals from across the water.

I remain, yours truly,

AN ARCHITECT.

[The reply to our correspondent in February number was based on the supposition that the competitors were instructed to send in their designs under motto. If such was not the fact, the case is of course materially altered, and there would appear to be no reason to find fault because first place was given to a signed drawing. We have on several occasions outlined the rules which should govern competitions. The majority of the profession are probably in accord with them, as suggested in the above letter, and if they will abstain from entering competitions, the conditions of which their judgment cannot approve, they will greatly assist in bringing about the reforms which they profess to desire.—ED. C. A. & B.]

A DIFFICULT PROBLEM.

QUEBEC, Feb., 1891.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—Encouraged by your kindly invitation to propound questions, the answers to which may be of scientific interest, and reminded by the locomotive boiler explosion, an engraving of which appears in the last number of the *Scientific American*, that I am still without an answer to a question I propounded at the time in relation to a similar occurrence in Quebec some years ago, I now beg to renew the query.

From what height must a portion of boiler plate (one quarter inch thick, some fifteen feet in area, and therefore weighing about 150 lbs.), torn from an exploded stationary steam boiler and launched into the air, have fallen to have been found by me standing upright in a log of white pine timber twenty-four inches square, into which it had penetrated to a depth of fourteen inches, almost exactly at right angles to the grain of the log.

The base of the parabola described by the missile did not exceed 100 feet. The ragged piece of plate had been blown out almost to a plane by the force of the explosion, and must have descended in an almost vertical direction, as that in which it would meet with the least resistance from the retarding atmosphere, or in a plane parallel to the falling leg of the parabola, whatever its position may have been in the ascending branch of the course.

If it be considered that a good man with all his might could hardly drive the sharp edge of an axe into a stick of timber, across the grain, to more than half an inch, it will be admitted that the blunt-edged piece of plate alluded to must have descended from an immense height, thus to imbed itself to such a depth as fourteen inches in a log of two feet in breadth.

This occurrence took place at Archer's steam mills at Sillery Cove, some five miles from the city, killing the engineer in charge; and it was on the occasion of my appearing before the coroner's jury that I visited the premises immediately after the accident.

C. BAILLAIRGE,
City Engineer, Quebec.

[It would be almost impossible to calculate the force necessary to make such a cut without making some experiments in order to form a sound basis for the calculation. However, some idea of the force may be formed in another way. We may assume that when the boiler exploded there was not less than eighty lbs. pressure shewn on the steam gauge. The sudden rupture of the boiler would permit its contents to escape into the atmosphere. Experiments in the flow of steam have shown that steam at eighty lbs. pressure will flow into the atmosphere through a safety valve at a rate equal to a velocity of 1,456 feet per second. This being the case, it is not unlikely that the piece of boiler plate started on its upward flight with an initial velocity not less than 1,000 feet per second. Leaving out of account the resistance of the air, a body projected vertically into the air at such a velocity would go up three miles before it stopped and began to fall. Again deducting the one-third for friction of the air while descending, the plate would strike the log with a velocity of nearly 550 feet per second. This velocity of a body of 150 pounds weight would be approximately represented by a pressure of 700,000 pounds on the surface of the log. The surface struck by the plate would be twenty-four inches by one-quarter inch, making six square inches, and the force of the blow would therefore have been about 116,600 lbs. per square inch, and we need not wonder that the log was cut to a depth of fourteen inches before all the energy was expended.—EDITOR C. A. & B.]

The Art Decorating Company has been formed at St. John's, Que., for the purpose of manufacturing the finer classes of clay goods.

The Richmond Slate Quarrying, Manufacturing and Asbestos Company has been incorporated at Richmond, Que., with a capital stock of $150,000, for the purpose of quarrying and manufacturing roofing slate and products of slate, and of pottery, clay, asbestos and other minerals.

The Boyton Wall Plaster and Cement Manufacturing Co. of Kingston, has been incorporated with a capital stock of $60,000. The promoters are James Minnes, E. A. Kirkpatrick, John Hewton, Robert L. F. Strathy, C. F. Gildersleeve, John Gaskin, Isaac Newlands, all of Kingston.

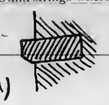
Incorporation is being sought for the Drummond McCall Pipe Foundry Co., of Montreal, to manufacture cast iron, gas, water, and other pipes. The applicants are: Geo. Drummond, James T. McCall, Thos. J. Drummond, Montreal; Thos. F. Griffin, Detroit; David H. Gilbert, Lachine.

COMPETITION FOR BILL OF QUANTITIES.

Following are the specifications accompanying annexed plans in the above competition:

EXCAVATOR, MASON AND BRICKLAYER.

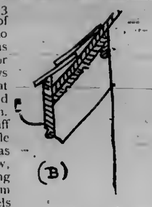
Excavate the ground as required for the cellars, and foundation of walls, chimney breasts, glazed pipe drains, etc. All vegetable mould to be put to one side for future use as directed. Fill in and ram and use the superfluous earth in terracing and leveling the lot, or cart away, as may be directed. The excavation to be 9" larger on all sides than the building, and no filling to be done till stone walls are plastered outside and inspected. The drains marked G. P. on plans to be executed with the best vitrified salt glazed pipe (Scotch or American), laid to proper fall as may be directed, jointed in cement, with all necessary bends, junctions and traps complete. Connect with sewer in street, contractor paying all fees. Put McGuires' cleaning out trap as shown, pipe from same to be carried to within 18" of surface and covered with stone flag. (All sewage drains inside of building will be of iron as per plumbers' specifications.) Lay 3" common tile weeping drains as shown properly graded and connected to main drains behind running traps as shown. Foundation walls to have footings of broad, flat stones 6" thick, projecting 4" on each side of wall above, and no stone to be less than half the total width of footing. The walls to be carried up to the height shown in good rubble masonry, composed of lake or other approved stone of the best quality, laid in the best prepared mortar, well built and bonded together, and having the joints on each side neatly struck with the trowel; the portion showing above ground and where lined is to be of brown Credit Valley stone in courses, neatly tape pointed in brown mortar, and having one bonder to at least every superficial yard of wall. The jambs to be tooth chiselled and to show a narrow draft on outer face. Plaster or parge outside of foundation walls from footings to finished ground line with ½ Portland cement mortar. None but hard bricks will be allowed on the premises. Brick walls in basement to be built of hard clinker bricks, with a neat struck joint. Build in all brick walls in basement a double course of roofing slate on top of footings 2" wider than wall to prevent rising of damp. Pier carrying front steps to be of hard clinker bricks on stone footings. The walls from underside of plinth to be carried up in brickwork of best hard, well-burned bricks laid in best prepared mortar. Projecting bays to be tied to main walls at every 5th course with stout hoop iron bond carried well into walls. Provide four (4) wrought iron straps 2" x ½" to be forked and built into brickwork, and well spiked to studding of front where prepared for tiles. The walls to be faced with the very best selected Carlton or other equally approved red bricks, selected of dark color, true and straight, laid in English bond, and finished carefully with a bead tool joint in mortar colored with Cabot's or other equally approved dark brown mortar stain; bricks to be well wetted. On completion of gutters, thoroughly clean down with acid. Inside walls of back porch to be faced with white bricks finished with neat bead tool joint. Turn relieving arches of at least two rings over all openings of doors, windows; &c., and neat cut and pointed arches at openings as shown. Build in strips for battens at every 2 ft. in height in all outer walls and wherever else directed—strips to be provided by the carpenter. Beam fill on all walls to underside of floor and roof boarding, making all spaces thoroughly tight and weather proof. Turn proper arches over fire place openings on 2½" x ½" wro't iron camber bar, all flues to be formed circular 9" diameter, carefully built round moulds 3 ft. long, which are to be drawn up a few inches at a time as the work proceeds. Provide and build in proper galvanized iron collars to one flue in each room (except those having fire places). Flues not connected with fireplaces to have proper iron soot doors in iron frames. Form ash dumps from ground floor fireplaces as shown, having iron soot doors set in cast iron frames. Leave 9" x 12" opening into vent flue near ceiling of kitchen, and 7" diameter into same flue near ceiling of bath room. Chimneys to be carried up in brickwork of uniform color with projecting courses for caps. Bed in mortar all bond timbers, plates, etc., and build in all lintels, wood bricks, frames, cut stone and other work required to be set in masonry or brickwork. Support foot of iron soil pipes with 9" x 9" brick pier, three courses high. Form substratum of concrete floor with a 6" layer of clean broken stone chips, pounded flat and level. The entire cellar floor to be laid in concrete 3" thick, of Portland cement, sharp sand and coarse gravel in proper proportions, and all but laundry and back porch floated to a smooth surface with a coating of Portland cement and sand ½" thick. Laundry and porch joists will be bedded in concrete. All hearths to have 4½ brick trimmer arches and to be of concrete as specified for cellar floors. Finished hearths will be of tile provided by the proprietor. Brickwork to be built from outside scaffolding which is to be left for the use of other trades till directed to be removed by the architects, special care being taken to prevent walls being splashed from scaffolding. The labels and strings where shown to be one course of plinth brick, set thus: (A).

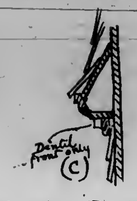


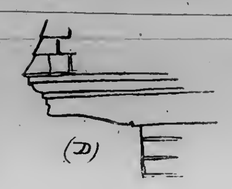
Provide and set sills of Credit Valley stone to basement windows, to be 6 in. x 9 in. and weathered; fuel doors will have wood sills. The sills to all other windows as tinted brown to be executed in the best quality of Portage Entry stone, or other approved brown stone, throated, chiselled, or rock faced, weathered and seated; rear sills may be of Ohio stone. Heads of fuel doors to be of brown stone 9 in. high. Head of entrance door to be of Portage Entry stone, 1½ bricks thick, cross tooth chiselled. Corbels at front pilasters to be of similar stone similarly finished. Carefully set in fine mortar and protect with boarding till the completion of the work. Bricklayer to attend on other trades in the execution and for the perfect completion of the work.

CARPENTER AND JOINER.

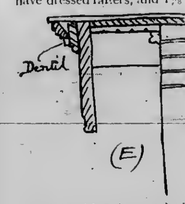
The lumber for the carpenters' work to be of good description of white pine thoroughly seasoned, free from sap, shakes, loose or large knots, or other imperfections, and to hold the full sizes shown or specified, when fixed in the building; good sound seasoned hemlock may be used for joists and rafters. The joiner's work (unless otherwise specified) to be of best description of white pine, clear and thoroughly seasoned. Inside work on ground and first floor will be varnished. Provide and fix all necessary centreings and turning pieces to openings of doors and where required. Provide and fix lintels to all openings of doors and windows, cambered at top, and not less than 6" in depth at centre, and resting 6" on walls on each side. Provide strips 2½" x ½" to be built into walls under bearings of joists and elsewhere as required for fixing skirtings, trimmings of doors, windows, etc., and other finishings, and at every 2 feet in height of outer walls, on which to nail battens. Batten all outer walls, (including attic where necessary) and elsewhere as required with 2" x 1½" battens, at 16" centres—battens not to be placed till walls are parged. Porches will not be plastered. Provide proper grounds for fixing trimmings, etc. Cellar floor of laundry and porch to have 3" x 4" cedar joists bedded in concrete. Ground, first and attic floor joists to be 10" x 2" at 16" centres properly trimmed at fire places, wells of stairs, etc., trimmers to be 4" thick or double 2" and framed with double tenons. Put a tier of 2" x 3" herring bone strutting to each bearing of joists on all floors. Prepare floors for pugging at gables where projecting beyond wall line with one inch boarding. Sloping roofs, 6" x 2" rafters at 16" centres, and valleys 8 in. x 3 in., plates 9 in. x 3 in., collars 6 in. x 2 in. at 16 in. centres. Ends of rafters to be dressed where visible. Sloping roofs to be laid with dressed ⅞ in. matched boarding in widths not exceeding 7 in., free from loose knots, shakes, or sap, well nailed. Put saddles behind chimneys boarded as roof and 3" rounded roll to ridges. Put dressed facia and 1" beaded soffit to eaves, and bed moulding. (B) Gables to be 4" of studding at 18 in. centres, sheeted both sides with narrow matched stuff and lined on inside before battening with a double thickness of sheathing paper well lapped; batten as specified for other walls, sheet soffits with narrow, double beaded stuff matched on double sheathing paper made close and tight at walls, etc., and (C) form eaves and bed mouldings, as shown. Beams and corbels at side gable to be dressed and moulded as shown (D); casings to windows to be moulded as shown. Front gable to have dentil moulded large



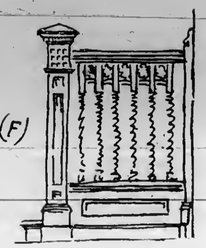




boards, as shown, (D) secured in strongest manner. Roof of rear porch to have dressed rafters, and 1½ in. matched and beaded dressed roof boarding.



Partitions to have heads, sills and braces 4 in. x 3 in.; door studs 4 in. x 4 in., or double 4 in. x 2 in.; common studs 4 in. x 2 in., 16 in. centres, all to be properly framed and cross braced, those carrying joists or rafters to have heads 3 in. x 4 in., and upper studs to be carried down to them and to be well braced. Studs to be placed on flat in confined places. The ground and first floors to be laid with ⅞ in. dressed, tongued and grooved seasoned flooring of the best quality in boards not exceeding 3½ in. in width, blind nailed to joists, and properly cleaned off on completion; attic and basement (where called for) to be laid with ⅞ in. matched flooring of good quality, in boards not exceeding 5 in. in width, floors in attic to extend to wall line. Ground and first floors to be laid on thicknessed 1 in. boarding laid diagonally with a double thickness of carpet felt between. Carpenters not to lay any floors till all gas or other pipes are put in, and finished floors not to be laid till completion of plastering. Put mitred margins to hearths. Main stairs to be built on 1¾ in. moulded strings, 1⅛ in. wall strings to have 1⅛ in. treads, rounded and returned nosings, cavetto and fillet and cut brackets, ⅞ in. risers, two 7 in. panelled and moulded newels at foot, and the rest 5 in. turned and moulded cherry newels, 3 in. x 3 in. moulded cherry handrail with 2 in. roll, and 2 in. turned pine balusters. Stairs to be built on proper carriages, well bracketted with 1 in. brackets nailed to each carriage under each step; Spandril at side of stair and forming enclosure to coat closet of 1⅛ in. framed and moulded panelling, all according to drawings; panelled door to closet under. End of stair facing entrance to have balustrade as shown. (F).



Back stairs to have 3 in. rounded hardwood rail, 4 in. hardwood newels, and square balusters, to have 1⅛ in. treads, rounded and returned nosings and scotia ⅞ in. risers, put together in the best manner, with 1¼ in. wall strings. Stairs to cellar to have close strings, 2 in. treads, 3 in. rounded rail, 4 in. x 4 in. chamfered newels. The kitchen, back stairs and pantries to be sheeted with ⅞ in. matched and beaded sheeting 3 ft. high, and bath room 5 ft. high, blind nailed to proper grounds, and finished with moulded capping; boards not to exceed 4 in. in width, except in bath room, where they will not exceed 2½ and to be double beaded or moulded. Drawing and dining rooms, hall, vestibule and staircase to have 10 in. double facia moulded skirtings, and the rooms and hall on first floor 9 in. single facia ⅞ in. thick, all properly scribed to floors and nailed to proper grounds. Nail fillet to floor at base. Base in attic 7 in. torns. Trim at registers and cut for plumbers, and hot air pipes. Put ⅞ in. staff beads to all projecting angles in kitchen and attic. Bracket down for plaster arches on ground floor and first floor, as shown by dotted lines, bracket down for cove in drawing room. The cellar windows (except where otherwise specified) to have 6 in. x 4 in. solid rebated and chamfered frames, 1¾ in. sash hung at top with 3 in. butts, and to be furnished with iron water-bars, 4 in. barrel bolts and hooks to hold them open. Cold air inlet to be protected with stout wire having ¾ in. mesh and well secured. Fuel doors to have 2 in. oak sills, to be 1¾ in. panelled and prepared with stops for glazing, hung at top and furnished with hooks and 6 in. bolts. The whole of the windows above cellar (except where otherwise specified) to have proper boxed frames, 2 in. double sunk sills, outside hanging stiles, 1¾ in. moulded sashes hung with the best sash cord over the best iron axle pulleys. Front drawing room window to have boxed head, fixed fanlight, moulded transom as shown. Four (4) windows on front elevation to have 2½ in. sashes with stops in preparation for plate glass. Windows to be fastened with approved fasteners of the value of $4.50 per doz., and furnished with best bronze ring window lifts. Bed room windows, first floor, front elevation, to have simple moulded pilasters, sills, heads and transoms as shown, fanlights to be fixed and prepared with stops for lead glazing. Short window at first main stair landing, and that in linen closet, to have solid rebated frames, with stops for lead work. Windows in coat closet under main stairs, and side windows in attic to have casement sash with drip and water bar, properly hinged, to have knobs, and secured with brass

golts. Dormers to be according to details and to have casement sash with drip and water bar, to be properly hung and fastened with sp ing catches and brass bolt. Fit to four windows in west elevation 1¾ in. outside venetians properly hung and fastened. Prepare four windows in front elevation for Willer sliding blinds with all necessary stops, fillets blocks, etc., complete. That on ground floor will be made to slide in pockets, behind window back, and covered with hinged flap. Entrance door to have 6 in. x 4 in. rebated and moulded frame, 2 in. staff bead, and 2 in. rounded oak sill. Door to be 2¼ in. oak veneered on outside, panelled and moulded and prepared with mouldings above for glazing, to be hung with three 5 in. loose butt bronze hinges, and furnished with hall door lock of the value of $3, and having 2½ in. bronze knobs. Vestibule doors to be 2½ in. panelled and moulded below, and prepared with mouldings above for glass, doors hung in rebated and moulded jambs with three pairs of 4 in. loose butt bronze hinges, and furnished with 4 in. Americ in rebate mortice locks, brass bolts, keys, bronze knobs and furniture, 9 in. bronze flush bolts. Back porch door to be 1¾ panelled and bead flush, hung on 6 in. x 3 in. rebated and chamfered jambs, having 2 in. oak sill, to be properly hung and furnished with Carpenters' rim lock, white furniture and 8 in. barrel bolts, hinged and bolted fanlight. Side porch door to be similar, but to have hall door lock of the value of $2, porcelain and plated furniture. The doors to the two p incipal floors to be 1¾ panelled and moulded and hung to 1¾ in. rebated jambs. Doors to principal rooms, ground floor, to be hung and furnished as specified for vestibule doors, those to first floor to be hung with 4 in. loose butt Berlin bronze hinges and furnished with 4 in. American mortise locks, brass bolts and keys, and porcelain and plated furniture. Sliding doors to have proper overhead track, and to be furnished with Clarke's patent hangers, and with sliding door lock and flush handles. The other doors throughout (unless otherwise specified) to be 1¾ in. panelled and moulded, hung with 4 in. loose butts to 1¾ in. loose jambs, and furnished with American mortise locks, brass bolts and porcelain and plated furniture, two doors in attic to have pivoted fanlights. Closet doors to be 1¾ moulded one side, furnished with locks and furniture to corre-pond with other doors. Doors marked "swing" to be 1¾ in. thick hung with nickle plated, Chicago spring hinges, and furnished with porcelain finger plates, both sides, and brass bolts. Opening marked "curtains" will not have doors but to be prepared for them, with rebated jambs, casings, etc. Doors in basement to be 1¾ in. batten in 1⅛ in. jambs, having stops planted on, hung with 4 in. butts, and furnished with rim locks and mineral furniture. Architraves on ground floor main building to be 5¼ in., double faced with band moulding. Architraves on first floor to be similar 4½ in. wide. Architraves in small rooms, passages, kitchen, attic, etc., to be 4 in. moulded with plain chamfered blocks. Put 2½ in. picture mould at spring of cove in drawing room. Windows, except those to two principal rooms, ground floor, to have 1½ in. moulded window-boards, bed moulds and moulded aprons. Windows of drawing and dining rooms to have panelled and moulded window backs. Front steps to have turned newels, moulded rail and balustrade as shown, treads to be 1¾ in., and slatted. Kitchen pantry to be fitted up with six tiers of 1 in. dressed and beaded shelving supported on proper bearings. Fit up dressers in kitchen and service pantry, having 1½ in. panelled and moulded doors, properly hung and fastened, ⅞ in. beaded shelving—lower portion to be wider and to have drawers and cupboards below, having properly hinged and fastened doors, all according to detail; top of wider portion of dresser will be flush with top of sink, and to be of hardwood grooved for drainer. Bed room closets to have beaded shelves as shown, 5 in. beaded rail and strong bronzed metal hooks, 9 in. apart. Provide 30 feet of beaded rail with hooks 9 in. apart, to be placed where directed, also 100 feet of shelving on bearers, all in addition to that specified for closets. Hanging shelf in larder to be of 1¾ in. stuff, suspended from ceiling with four ½ in. wrought iron rods. Fit up two tiers of 1½ in. shelving at each end of larder on proper supports. Linen closet to have wide shelves six in height, at ends, and enclose those at one end with hinged cedar fronts, fastened with spring catches. The steps in back porch to be of pine 1¼ in. treads, 7 in. risers, 2 in. strings, rounded rail, bar balusters and chamfered newels. Fit up stands for kitchen and cellar sinks with hard wood capping. Do all necessary attendance and fitting for bath, basin and water closets (not including plumbers' work). Case plumbers' work where required with narrow sheeting hinged and bolted at front. The capping of bath and lids and seats of w. c.'s to be of cherry the latter supported on moulded brackets; w. c.'s to have double lids for slop sink. Front of bath to be of same sheeting as specified for room; panelled, hinged and bolted doors to front of basin. Provide all necessary boxing and beaded runs to pipes; do any necessary cutting for plumber. W. c. in cellar to be enclosed with sheeting, and batten door, and hung and furnished as other basement doors. Door to be kept 6 in. from floor and ceiling. Borrowed light as shown. Put 2 in. planking in yard at doorway, as shown on 4 in. x 4 in. cedar sleepers. Form slatted walks as shown with 2 in. x 2½ in. dressed stuff, dressed three sides, on 4 in. x 3 in. cedar sleepers; put rounded curb at edges of that to main entrance. Put side gate as shown formed with narrow pickets, and strong framing hung with strong T hinges and furnished with wrought iron thumb latch, bolt and padlock, dressed and rounded cedar posts, footed, and having chamfered head piece. Erect short piece of picket fence 6 feet high on south side to harmonize with gate, also a short piece on north side of porch. Fuel bins to be constructed of 2 in. horizontal planking, strongly nailed to 4 in. x 4 in. posts extending from floor to ceiling; the front to be made to slide in grooves for removal if necessary. Construct cold and fresh air ducts of dry 1 in. matched stuff with hinged valve, which will close inlet from floor when opening that from outside. Carpenter to attend on other trades in the execution and for the perfect completion of the work.

SLATER.

Line valleys with galvanized iron 15 in. wide, increasing to 18 in. near font. Joints to be soldered where in danger of snow backing up water, and to have 4 in. lap in other places. Cover ridges, etc., with No. 28 iron. Step and cloak flash against all walls, chimneys and checks and apron of dormer. Put strip of galvanized iron 5 in. wide, 3 in. on roof and 2 in. drip over back of gutter, well secured. Cover flat of cornice over three windows on first floor with galvanized iron, lapped, tacked and soldered, and turned up 6 in. behind tiling. Cover the sloping roof, including back porch and checks of dormer, with best quality of Canadian roofing slate from the Rockland quarries of about 20 in. x 11 in. size, and having double courses at eaves. Slates to be laid on heavy felt provided and laid by slater. All exposed portions of dormer to be carefully covered with felt well lapped. Cover east and south gables as shown with Dancy's, Ontario, or other equally approved tiles, of good rich, dark red color, well secured to walls, and laid on heavy felt, well lapped and tacked.

TINSMITH.

Put 4 in. eave troughs of galvanized iron to eaves of back porch, and 5 in. do. to eav's of house of No. 28 gauge iron. Gutters to be stiffened with 7-16 in. x 7-16 in. wro't iron bars and well secured to rafters, and to have, backs carried up to slates. Put three (3) stacks of 4 in. octagon down pipes to house and one 3 in. to back porch, all to be of the very best iron No. 28 gauge, approved brand, properly connected with gutters, secured to walls with iron holdfasts, and extending to surface of ground and there connected with drain pipes with proper caps to pipes. Carry 3 in. down pipes from gutters on south gable to main eaves.

PLUMBER AND GAS FITTER.

Lay on through house best tested iron piping, beginning with 1¼ in. at meter, and connected with various points marked on plans with letters P for pendants and B for brackets, nipples left capped ready for fixtures. Pipes to diminish according to position to 1 in., ¾ in., and ½ in., all to be thoroughly tested. Drop lights to be taken out of the side of supplies and all supplies to brackets to rise from supply below, and in no case to drop from pipes overhead. Lay on separate supply from separate meter, to two fire-places on ground floor and to gas-stove in kitchen, beginning with ¾ in. and diminishing to ½ in. Provide cocks with keys at fire-places. Lay on water to sinks, bath, basin and water closets with ½ in. 6 lbs. lead supply. Service from street line to line of branches to fixture to be ⅝ in. 8 lbs. lead. Provide hose connection at window of furnace room, with key cock, and provide stop and waste cock near floor. Put ¾ in. brass stop and waste cock immediately inside wall of house, and all pipes to be graded to this point. Fit up in bath room best No. 14 gauge, tinned and planished copper bath 6 ft. long, with ½ in. 6 lbs. lead, hot and cold supply, and best heavy plated Fuller double bath cocks, plated rose and 1¼ in. overflow, 1½ in. waste, Dubois trap, and brass trap screw, and plated plug and chain. Wash basin of best marbled earthenware, oval, and having Motts standing waste, 1¼ in. counter sunk marble top, 1 in. back and end, 12 in. high, heavy-plated Fuller cocks, ½ in hot and cold lead supply and 1¼ in. lead waste, Dubois trap and brass trap screw. Basin to be attached to marble top by means of br ss clamps. Provide and fit up on first floor an all porcelain flushing rim wash-out closet, equal in value to the Inodoro or Unitas, with lead lined tank, having brackets, valves, supply, overflow, ball cock, &c., complete. Provide porcelain drip tray. Soil pipe to be 4 in. of cast iron carried from drain 2 feet beyond wall to 4 feet above roof at point of exit and to down pipes at surface of ground, to be coated both sides with c al tar and joints carefully caulked with oakum and lead. Dig for these pipes and replace earth properly leveled, and cart away surplus if any. Pipe to be of weight called for in city by law. Provide all necessary traps and hand-holes, with brass cleaning screws as shown. Foot of soil pipe will be supported on brick pier built by mason. Carry 2 in. cast iron waste from kitchen sink along ceiling of cellar to main soil pipe, supported on wro't iron hangers. Carry a 3 in. cast iron vent pipe from basement closet connecting to soil pipe above highest fixture (in bath room), and leave connections for vents from the various traps as required. The 4 in. soil pipe to be enlarged to 6 in. above roof line, and to have open mouthed top. Carefully flash on to roof with 16 oz. copper, into hub which must be kept clear of roof. W. c. in basement to be a flushing rim, cane ware wash out with 4 in. trap, syphon, cistern, etc., complete. Ventilate from seat to special flue in laundry with 3 in. galvanized iron pipe. Put a 7 in. diameter enameled valve register in vent flue near ceiling of bathroom. Put a 9 in. x 12 in. enameled valve register near ceiling of kitchen into vent flue. Ventilate drain by means of a 4 in. cast iron pipe connected to drain and carried 2½ feet above finished ground line with return bend top. Put under bath and wash basin on first floor proper safes of 3 lbs. lead with ¾ in. waste, with brass flap valve on the same emptying over kitchen sink. Carry proper safes under all pipes crossing ceilings. Safe under w. c. on first floor to be of marble, 1¼ in. thick and counter sunk; put brass strainer on outlet of waste and connect to other safe wastes. Fit up in kitchen best galvanized iron sink 2 ft. 6 in. long, with brackets and enamelled back and having 1½ in. heavy lead waste with Dubois trap, and brass trap screws and hot and cold supply of ½ in. lead pipe with brass Fuller cocks. Fit up in kitchen at back of stove on proper stand a heavy galvanized iron round topped cylinder of 40 gallons capacity, with ⅜ in. heavy lead hot and cold supply, ¾ in. brass connections with stove in kitchen with shut-off cock; connect to stove with 1 in. iron pipe. Cylinder to have ¾ in. sediment pipe and cock at bottom; also place ½ in. stop cock on supply pipe. Boiler to be supplied from pressure; provide combined safe and vacuum valve. Fit up small cast iron sink in cellar, having 1½ in. lead waste, trapped and supplied as other sink Overflow pipe from basin and bath to be branched into dip of traps from same. Make all necessary Y branches for work as required, all waste pipes to have vents of 1½ in. and 2 in. lead pipe, carried into 3 in. pipe before mentioned. Vents for w. c.'s to be 3 in. diameter. Provide and fix from hall near head of main stairs to kitchen a proper tin speaking tube, with silver plated mouth pieces, etc., complete. All to be left complete and perfect in every particular. All work to be in conformity with city by laws.

PLASTERER.

Inner face of all outside walls, including attic, to be well rendered with best hair mortar after being built and before battening is executed, and make thoroughly tight also between all joists, etc., entering therein, also about all door and window frames. Floors at gable in attic to be deafened with mortar 1½ in. thick. Lath the partitions, ceilings, soffits of stairs and other places prepared for lathing, with the best sawn pine laths, 1 in. wide for ceilings and 1¼ in. for walls, 5-16 in apart, ends butted and joints broken every 18 in. Outer walls will be battened for lathing. Porch will not be plastered. Plastering to be of the best two coat work hard white finish. The ceilings of cellars throughout to have two coats hard white finish. The first coat of plaster in all cases to be continued behind skirtings, trimmings, etc. Form slightly rounded corners to all projecting angles to principal rooms and hall on ground and first floors. Simple cove in drawing room springing from wood-n picture mould. Plaster cornice in dining room to be 24 in. girth, in hall 20 in., and in vestibule 15 in. Put 2½ ft. moulded centres to dining and drawing rooms, and 18 in. diameter to hall. Form simple moulded beams in ground and first floors as shown by dotted lines. Twice lime whiten walls of cellars. The whole to be executed with the best description of materials and workmanship, and to be left sound and perfect after making good after other trades Plasterer to remove rubbish and broom out floors on completion. Leave woodwork clean and ready for painter.

PAINTER AND GLAZIER.

The whole of the internal and external dressed woodwork usually painted and except where otherwise specified, including outside steps and slatted walks, and dressed fence and gate to be painted three coats of white lead and linseed oil paint of approved tints. The work to be properly knotted and stopped, and well rubbed down after first and second coats. The woodwork of ground and first floors to be stained, oiled and twice varnished with best copal varnish. Treads and risers of main and back stairs to be stained and twice oiled. No inside blinds to be included in tender. Outside venetians to four rear windows to be painted three coats after priming. The visible galvanized iron work to be painted three coats. Except where otherwise specified, the whole of the windows and fanlights, glass doors, etc., to be glazed with double diamond star glass, selected free from flaws and defects, to be well puttied and back puttied, and bradded, the whole of the sashes to be primed before glazing. Glaze four windows on east elevation with ¾ in. polished plate glass, and the small square lights of east windows in attic with rolled cathedral glass of selected tints. The glass in fuel doors to be ⅛ in. rough rolled plate secured with stops. Other glass in cellar to be diamond star. The two windows at staircase landings and fanlights of four windows in east elevation to be glazed with stained glass provided by proprietor. Glass in vestibule doors will be provided by proprietor. Glass in entrance door to ⅜ in. be polished plate, bevelled. Glass in fanlights as marked to be ground; glaze borrowed light in basement w. c. with ground diamond star glass. Clean windows, scrub floors before and after painting, and leave all clean and perfect on completion. Put in sashes when directed, and do any necessary re-glazing required.

AN ACT TO INCORPORATE THE PROVINCE OF QUEBEC ASSOCIATION OF ARCHITECTS.

WHEREAS it is deemed expedient for the better protection of the public interests in the erection of public and private buildings in the Province of Quebec, and in order to enable persons requiring professional aid in architecture, to distinguish between qualified and unqualified architects, and to ensure a standard of efficiency in the persons practising the profession of architecture in the Province, and for the furtherance and advancement of the art of architecture;

And whereas the persons hereinafter named have, by petition, set forth that it is desirable that they, together with such other persons as may be hereafter associated with them, be incorporated by the name of "The Province of Quebec Association of Architects," having for its object the acquirement and interchange of professional knowledge amongst its members, and more particularly the acquisition of that species of knowlege which shall promote the artistic, scientific, and practical efficiency of the profession of architecture; Therefore, Her Majesty, by and with the advice and consent of the Legislature of Quebec, enacts as follows:

1. This act may be cited as "The Province of Quebec Architects Act."

2. J. W. Hopkins, F. X. Berlinguet, Victor Roy, A. C. Hutchinson, A. F. Dunlop, A. Raza, A. T. Taylor, M. Perrault, J. F. Peachy, J. Nelson, W. E Doran, C. Clift, Chas. Baillairge, W. T. Thomas, W. McLea Walbank, Jos. Venne, A. J. Pageau, S. Lesage, J. A. Proudfoot Bulman, J. Z. Gauthier, J. Y. Resther, Theo Daoust, G. E. Tanguay, D. Ouellet, J. H. Bernard, J. Wright, L. R. Monbriant, G. G. Languedoc, J. A. Chausse, R. Findlay, A. Gendron, L. C. Ernest Page, H. Staveley, J. B. Resther, J. J. Brown, W. H. Hodgson, J. H. Bonel, A. F. Fowler, E. C. Hopkins, Eric Mann, and all other persons who may be hereafter associated with them, shall be, and are hereby constituted a body politic and corporate, under the name of "The Province of Quebec Association of Architects" hereinafter referred to as the "Association."

3. The said Association shall have power:

1. To acquire and hold all lands and property necessary and required, in order to carry out the objects and purposes for which incorporation is sought, provided that the annual value of the real estate, held at one time for the actual use of the Association, shall not exceed five thousand dollars; and the said Association shall also have power to sue and be sued, and implead in their corporate name;

(2). To make and pass by-laws in accordance with this Act, for the direction and management of the Association; the admission to the study and practice of the profession of architecture, and all rules that may be deemed necessary for the maintenance of the dignity and honor of the said profession, and alter or amend the same when deemed advisable.

4. The head office of the Association shall be in the city of Montreal.

5. The said Association shall be governed by a Council, hereinafter referred to as the "Council," consisting of a president, two vice-presidents, a secretary treasurer, and six members, all of whom shall be members of the Association, and shall be elected annually in the manner provided for in the by-laws of the Association.

The first Council to consist of the first eleven persons named in the first section of this Act; and they shall hold office until their successors are elected.

6. The said Council shall meet at the city of Montreal, within one month after the incorporation of the Association, for the purpose of organization.

They shall make such by-laws as may be necessary for the government of the Association, subject to ratification at the first annual meeting of the Association.

7. The Council shall, through their secretary, give notice in the Quebec Official *Gazette* of the completion of its organization; whereupon any person practising the profession of architecture within the Province, on the coming into force of this Act, may become a member of the Association by causing his name to be registered with the secretary of the Association within six months after such notice, and by paying to the secretary such fees as may, by by-law or otherwise, be made payable in that behalf.

In case any such person, as aforesaid, omits to be registered within the said period of six months, through absence, illness or inadvertence, such person may, at the discretion of the Council, be admitted to enrollment as an architect.

The Council may also admit to membership all members of associations of architects in the sister provinces, also members of the Royal Institute of British Architects, and of foreign associations of architects of equal standing on their presenting their credentials.

Architects not members of these associations, who shall have practised for five years, shall be admitted without serving as students, but shall be required to pass the final examinations.

8. Any other person who applies for admission to registration as an architect, after the coming into force of this Act, shall not be less than twenty-one years of age, and shall have served as a student not less than four years with a principal or principals entitled to register under this Act, or with any other principal or principals approved by the Council, and have passed such qualifying examinations as may be required by the by-laws of the Association except in the cases provided for by this Act.

9. The Council shall admit, as students or associates, those desirous of entering the profession of architecture.

Candidates must give one month's notice to the secretary, giving their full names.

They shall pay such fees and submit to such examinations as shall be necessary in that behalf.

Graduates in arts or sciences of any university in Her Majesty's Dominion, or of the Polytechnic School of Montreal, shall not be required, however, to pass any preliminary examinations; provided that any person who, before the passing of this Act, was entered as a student for a shorter term than five years, but not less than three years, with a principal or principals approved by the Council, shall, on serving the full time of his indenture and passing the examinations prescribed by the Council, be entitled to register under this Act.

Notice and evidence of existing studentship shall be given to the secretary within six months after the passing of this Act, and shall be accompanied with such fee as the Council shall, from time time, direct, and with proper certificate of such studentship.

Upon and after the passing of this Act, students shall serve such term as is required to be served by the provisions of this Act, under indenture to a registered architect, which indenture and any assignment thereof with affidavit of execution thereto attached, shall be filed with the secretary upon payment of such fee as the Council may by regulation direct.

The Council may shorten the period of studentship to a term, however, of not less than three years in favor of graduates of any recognized college or school of architecture or technology.

The Council shall admit after sufficient examination every graduate of a recognized school of architecture or technology after one year's study under a principal approved by the Council, provided the course of studies followed by such candidate shall have been not less than four years.

10. The Council shall appoint an examiner or examiners for the purpose of ascertaining and reporting on the qualification of all persons who shall present themselves for admission to the study or practice of architecture.

The Council shall also prescribe the subjects for such examinations which shall take place in January and July on the days previously fixed and advertised by the Council.

11. The Council shall fix a tariff for the services of members which, when approved of by the Lieutenant-Governor in Council, and published in the Official *Gazette*, shall be accepted in all courts of law as evidence of the value of such services, except there be an agreement in writing.

12. The time and place of the annual meeting of the Association and of special meetings thereof, and for meetings of the Council, shall be fixed by by-laws, also the mode of summoning and conducting the same.

In the absence of any rule or regulation as to the summoning of meetings of the Association or of the Council, it shall be lawful for the president, or in the event of his absence or death, for the secretary to summon the same at such time and place as to such officer seems fit, by circular letter to be mailed to each member.

13. From and after the first day of July, 1891, no person shall be entitled to take or use the name or title of "Registered Architect," either alone or in combination with any other word or words, or any name, title or description implying that he is registered under this Act unless he be so registered. Any person who, after the above date, not being registered under this Act, takes or uses any such name, title or description as aforesaid, shall be liable on summary conviction, to a fine not exceeding $25.00 for the first offence and not exceeding $100.00 for each subsequent offence.

14. The secretary shall, in every year, cause to be printed, published and kept for inspection at his office free of charge, under the direction of the Council, a correct register of the names in alphabetical order according to the surnames, with the respective residence in the form set forth in schedule "A" to this Act or to the like effect, of all persons appearing on the general register on the first day of January in every year, and such register shall be called the "Architects' Register," and a copy of such register for the time being, purporting to be so printed and published as aforesaid, shall be prima facie evidence in all courts and before all justices of the peace, and others, that the persons therein specified are registered according to the provisions of this Act; provided always that in case of any person whose name does not appear in such copy under the hand of the secretary, the entry of the name of such person in this register shall be evidence that such person is registered under the provisions of this Act.

The secretary shall keep a similar register of student associates.

15. Members and student associates shall pay on such registration an annual fee as shall be required by the by-laws.

The names of those in default shall be removed from the respective registers by the secretary, after one month's notice to the parties, and shall not be re-instated except upon the payment of all arrears and such fine (if any) as may be imposed by the by-laws of the Association.

16. The Council may direct that a name be removed from the register in the following cases, (that is to say) at the request or with the written consent of the person whose name is to be removed, or where the name has been incorrectly entered, or where a person registered has, after the passing of this Act, been convicted either in Her Majesty's dominions or elsewhere, of an offence which, if committed in Her Majesty's dominions, would be a misdemeanor or higher offence, or where a person registered is shown to have been guilty after his registration and either in Her Majesty's dominions or elsewhere, of any conduct or breach of the by-laws orders or regulations of "The Province of Quebec Association of Architects" or of conduct infamous in a professional respect.

When the Council shall have removed the name of any person from the register, the name of that person shall not be again entered upon the register, except by a resolution of the Council or by an order of a court of competent jurisdiction.

The Council may, by resolution, direct the secretary to restore to the register any name removed therefrom either without fee or upon payment of such fee not exceeding the fees in arrears or unpaid, and one additional renewal fee as the Council may, from time to time, fix; and the secretary shall restore the name accordingly.

The name of any person removed from the register at the request of such person or with his consent, shall, unless it might, if not so removed, have been removed by order of the Council, be restored to the register, on his application and on payment of such fees not exceeding such fees as shall be in arrears, and one additional registration fee, as the Council from time to time, may fix.

In the event of removal or expulsion an appeal shall lie to the Association which, at a general meeting, may reverse the decision of the Council.

17. Subject to the other provisions of this Act all notices and documents required by or for the purpose of this Act to be sent, may be sent by post, and shall be deemed to have been received at the time when the letter containing the same would be delivered in the ordinary course of the mail; and in proving such sending, it shall be sufficient to prove that the letter containing the notices or documents was prepaid and properly addressed and registered and put in the post.

Such notices and documents may be in writing or in print, or partly in writing and partly in print, and when sent to the Council or other authorities, shall be deemed to be properly addressed, if addressed to the said bodies or authorities; or to some officer of the Council, or authority, at the principal place of business of the Council or authority, and when sent to a person registered under this Act, shall be deemed to be properly addressed, if addressed to him according to his address registered in the register of the Association.

18. All moneys arising from fees payable on registration or the annual renewal fees, or from the sale of copies of the register or otherwise, shall be paid to the secretary of the Council, and by him paid over to the treasurer, to be applied, in accordance with such regulations as may be made by the Council, for defraying the expenses of registration, and the other expenses of the execution of this Act, and subject thereto towards the support of museums, libraries or lectureships, or for other public purposes connected with the profession of architecture, or towards the promotion of learning and education in connection with architecture.

The Council shall have power to invest any sum not expended as above, in such securities as shall be approved by the Government of the Dominion of Canada or of the Province of Quebec, in the name of any three of their number appointed by the Association; and any income derived from such invested sums shall be added to and considered as part of the ordinary income of the Association.

The Association may also use surplus funds or invested capital for the

rental or purchase of land or premises, or for the building of premises to serve as offices, examination halls, libraries, museums, or for any other public purpose connected with architecture.

19. It shall be the duty of the secretary to keep the register in accordance with the provisions of this Act, and the by-laws, orders, and regulations of the Council.

All deeds of the Association shall be signed by the president and secretary and sealed with the common seal of the Association.

20. This Act shall come into force on the day of its sanction.

SCHEDULE A.

Date of Registration.	Name.	Title or distinction if any.	Residence.

HOT WATER WARMING IN DOMINION BUILDINGS DURING THE PAST TEN YEARS.*

By D. Ewart and Walter R. Billings.

The authors of this paper advance no claim for originality or novelty, it being prepared merely to attempt to convey to the Association an outline of some of the practice adopted in warming the various Dominion buildings with hot water plants.

The relative merits of hot water and steam as warming agents cannot be gone into here. They were fully considered by the chief architect who more than ten years ago satisfied himself on that point, and since then the Dominion buildings have almost invariably been heated with hot water, excepting when the intermittent use of the building or where the use of machinery therein rendered steam more advisable; and in such few buildings as the Smead-Dowd system or the use of wood stoves were preferable.

Nearly 100 buildings ranging in size from small village post offices to the Langevin block at Ottawa, have been successfully heated by warm water, and we will at once proceed to give you an idea of the class of plant so far adopted.

Among furnaces, the wrought iron pipe furnace, invented forty years ago by a veteran hot water heating engineer of Montreal, to whom the excellence of the modern direct hot water heating apparatus is mainly due, stands first for quick circulation, durability, and economy of fuel. The successful practice of the firm inaugurated by this engineer, shown throughout the breadth of Canada and the northernmost States of the American Union in heating long, extended and rambling buildings, such as convents and asylums, satisfactorily, and with a lower expenditure of fuel than could be obtained from low-pressure steam plants in buildings of precisely the same character, at a time when steam heating engineers were wont to assert that hot water could not be distributed throughout long, low buildings, evenly and economically, was largely due to the kind of furnace employed, and could not so readily have been obtained with the Cornish, the Tubular, the Saddle, or any of the cast iron sectional furnaces then in the market.

Owing to prime cost of the pipe furnace and its need to be built in brickwork, the chief architect has used some of the excellent sectional heaters now in the market for small and medium sized buildings of compact layout; but in all others where anthracite coal is used, the wrought iron pipe furnace is first favorite.

Where the use of bituminous coal is more economical than anthracite the pipe furnace chokes too rapidly, and the more shggish or less rapidly circulating wrought iron tubular as well as the cast iron sectional furnaces are used for the large and small buildings respectively. The tubular furnace differs from the steam cylindrical boiler only in having the steam space as well as the water space filled with tubes. It is built in brickwork, the grate under the proximal end, the flame and gases of combustion passing backward under the shell to a chamber behind the distal end, returning from thence to a second chamber at the proximal end, and passing finally either backward over the shell to the chimney, if the draught be good enough, or passing at once into the smoke pipe, in the case of the draught being a medium one. In these cylinders the tubes have usually been 3", but the experience of the Department would indicate that 4" tubes would not be too large.

The advantages of the cast iron sectional furnace is its relative small size and cost, and that it does for both bituminous and anthracite coal. In the smallest buildings no main larger than 2" is required, so that these furnaces as manufactured are ready to set up, but in medium sized buildings where larger mains were required, and in those cases where twin furnaces were considered preferable to single ones, headers for the connection of the mains had to be provided.

In some cases where a single furnace is used, its sudden failure in cold weather may be a serious matter, especially if the furnace become entirely disabled in a town where a duplicate furnace cannot be at once obtained. In the case of a greenhouse, such a case is worse than its occurrence in an official building, but, in any case, the want of heat even for a few days is a serious matter, besides the trouble to the officials. It would be a serious matter to the caretaker who lives on the premises and whose sole means of heating would then be his cooking stove. Failures, however, are of extremely rare occurrence, and in case of a pipe furnace, seldom serious, being usually the breaking of a cast iron connection, when plugging the pipe is all that is necessary, until a fitter can be had. To guard against the disagreeable probabilities referred to, twin furnaces are sometimes used with advantage—in which case the headers are connected with both furnaces, the connections having gate valves so arranged that one or both furnaces can be used as required.

For the piping, wrought iron pipe has been used throughout, even the stacks of 4" piping at the greenhouse of the Central Experimental Farm being of this kind. All pipe fittings and the furnace headers are, however, cast iron.

In the arrangement and layout of the mains, what may be called the direct system, i.e., that which offers the shortest distance and easiest flow to and from the heating surface, is used. The flow and return mains are counterparts, and go side by side. In no case has the system some architects adopt of having a separate flow and return from the furnace to each heating tract been used, although, in some cases, one or more mains are taken off the header exclusively for the use of the ground floor. When separate mains, as aforesaid, are used for supply of ground floor heating surface, they are always taken off midlength of the header, where the circulation is more lively, the mains of the upper floors taking the outside, and, in a 3-storey building of the ordinary departmental type, owing to the less rapid circulation of the water to and greater height of ceiling in the ground floor, the total sectional area of the main or mains of that floor at the header is equal to that of the first and second floors combined, leaving all 1-storey annexes out of the question. In the cases referred to, where the ground floor mains are separate from those of other floors, the two upper floors are served from the same horizontal mains, but in all cases, whether the risers are all taken from one main, or whether the risers of the ground floor have a separate main, the first and second floors are taken from the same sets of risers. These risers are straight from bottom to top, the upper run being diminished in sectional area at the point where the connection of the lower tract of heating surface is taken off. The practice of taking the upper run off a side branch of a T below the connection to the valve of the lower tract of heating surface is never used. However, in nearly all cases the horizontal mains in the basement are trunks of which all the risers are branches, those serving the ground floor being devoted to it alone, while as stated in the foregoing, the others may each serve two floors.

The relative sizes of hot water mains, branches and connections, both horizontal and rising, require some working out. Schumann and other standard writers give the rule: "The sectional area of a branch pipe must equal the areas of all the connections, and the area of a main pipe must equal the area of all branches." The fallacy of this view is easily demonstrated, for as the internal surface, and consequently the friction, is proportionately much greater in smaller than in larger pipes, consequently these need not have proportionately so large a sectional area as those. In proof of this I subjoin a table giving in one column the amount of heating surface in square feet, for the several sizes of connections, based on a proportionate increase from the standard of 50' to a 1" pipe connection, and in the other, the amounts used in good practice with quick circulating furnace and evenly circulating pipes:

Bore of main or connection.	Quantity of heating surface based on a proportionate increase from 50' to a 1" connection.	Quantity used in good practice with well circulating plant.
1 inch	50 square feet	50 square feet
1¼ "	84 " "	84 " "
1½ "	112 " "	200 " "
2 "	200 " "	400 " "
2½ "	314 " "	833 " "
3 "	450 " "	1,000 " "

The foregoing list is not offered as a carefully worked out scheme, but as an indicator of the fallacy of direct proportions. In the early days, some of the public buildings were piped on the rule found in most manuals, but with disadvantage, and it became evident that no table could be exclusively followed.

A large heating firm has in one plant a six inch main supplying 30,000 lineal feet of 1" pipe (10,000') in heating surface, circulating well, whilst in another plant where the length of the main is greater, 7,000 lineal feet of 1" pipe (2,334') is all that can be circulated well on a main of that size. Another example by the same firm—the plant at the McGill University, Montreal, has a 2½ inch main circulating 2,500 lineal feet of 1" pipe in heating surface.

The intention in laying out an apparatus is to arrange the branches of the main in such a manner that all will circulate evenly, and if the risers for the supply of upper flats and the easily flowing wall coils could be taken from the distal end of the horizontal main, and those for the ground floor and the cast iron radiators could be placed at the proximal end, being careful in both cases to calculate the individual instances at their exact proportionate rate of circulation, the matter would be an easy one; but as the occurrence of such a case falls little short of a fairly average miracle we do not take it into account, and various shifts have in consequence to be made to get over the difficulties, in carrying out many of which we are dependent on the skill of the fitter employed. For instance, when it can be helped we must not take off many branches in the same neighborhood, and on no occasion take off the main a quick circulating and a sluggish branch close together. In the latter case, where the two neighbors are flows, one will rob the other; and if they are returns, the one containing the warmer water returning will back up the other and thus obstruct the circulation of the heating tract connected with it.

The custom has been to take all branches off the top of the horizontal mains, but occasionally, as a check, a branch is taken off the side of the mains.

The practice is to allow a radiator valve both to the flow and the return of each radiator or coil. For all ground flow surface and for any riser which returns or feeds but one coil on any upper floor, only the flow valve is connected to the radiator, while the return valve is placed in the cellar with the draw off valve beside it, in order that the single heating tract may be conveniently emptied without disturbing others—a convenience which must be foregone in the case of one riser feeding or returning more than one radiator or coil, as in such a case, all the heating surface served by the return pipe must be emptied at once. The ordinary peet valve is used on all mains, headers and branches, and wherever a valve is needed, excepting on supply connections of ground floor and attic heating surface, and to any heating tract which is the last on the riser, in all of which exceptions globe angle valves are more suitable as well as cheaper.

The best kind of heating surface to employ is a matter of great importance, and one which should be decided before the arrangement and sizes of piping and the quantity of heating surface can be decided on. In the public buildings it was a matter presenting some difficulties.

In steam heating practice, effective radiators such as the Nason, Walworth *et al*, which are attractive in appearance, economical of floor area, and rapid in returning the water to the boiler, were in the market at a figure which ensured their use in preference to box coils, the appearance of which has always been their only drawback. Ten years ago the so-called hot water radiator known to the profession was sluggish in action and possessed of but one inlet, being used by heating engineers who where educated to the use of the now almost obsolete one pipe system. Naked box coils, although excellent circulators, were objected to in some of the more pretentious buildings, and in order to hide them, cast iron screens and marble slabs were used, thus destroying their efficiency—hindering the circulation of air about the pipes, and affording a receptacle for dust, always difficult to remove, and the removal of which was frequently neglected owing to its being out o sight. These difficulties, as well as that, in some cases, the exigencies of limited wall space in stairway halls and in rooms of large area having many

* Paper read at the Third Annual Convention of the Ontario Association of Architects.

openings or other interruptions of the continuity of wall surface, rendering necessary a large quantity of heating surface in a small heater, caused several Canadian firms to encourage the invention and commence the manufacture of radiators for hot water heating. These have so far been of cast iron, several of the more recent being good circulators and inferior in efficiency to box coils, wall coils or circulations only. There are, however, wide differences in price and in results between the various kinds, the cheapest varieties, even though they may show the largest number of testimonials, not being necessarily the most scientifically constructed, and it behooves the architect to examine if possible their behavior, and to make a comparative test.

The wall coils (circulations) found most effective are 1 x 8 pipes or 1 x 6 pipes, although 2 x 8 and 2 x 6 are as frequently used owing to want of long reaches of uninterrupted wall. A number of 2 x 6 and 2 x 8 wall circulations in the Langevin block at Ottawa, have each 500 feet of 1" pipe, and several of the 1 x 8 have 300 feet. The best form so far used, is that sometimes called a trombone coil. Taking a 1 x 8 for example, we have at one end two 4-branch headers one above the other, the supply and four of the heating pipes connected to the upper, and the return and four pipes to the lower—the pipes of each series of four being parallel with each other, but the upper and lower series converging towards the distal end, where they unite by semi-circular connections which afford the minimum of friction. These afford a rapid circulation, and being widely distributed, ensure more rapid diffusion of heat than can be had from closely packed stacks and clusters of pipe, or from the more widely known radiator.

In a large number of cases box coils, wall coils and radiators were used in the same building, and the difference in rapidity of flow of water in these three species complicated the problem, and sometimes brought about unexpected results—e. g., of the risers, those to an upper floor, and of heaters, the wall coils, had the best circulation; and as the radiators (the slowest circulations) were usually situated on the ground floor, whence the water had less tendency than to the upper floors, the ground floor had two factors against a good circulation, while the upper floor had the willingness of the water to rise, and the advantage of the best circulating heaters in their favor.

A series of rules for computing quantities of heating surface proportionate to the given cubic contents, can be had in any of the books on heating, but in this climate, an architect soon learns to use them merely as a basis for departure. Conditions vary so much, that even if this paper were a general one, there would not be space enough for its general consideration; but the conditions in the case of one ordinary post office are so nearly those of another, that once a quantity is found productive of content in one, the same is used in the others. So far a proportion of five lineal feet of one inch pipe (1¾ square feet of heating surface) to each 100 cubic feet of space, has been found sufficient in rooms having but one side to the weather, provided the circulation be good. When two or more sides are exposed, the heating surface is increased 1⅞ for every 2⅞ in surface outside wall. Where wall coils or circulations not more than 8 pipes high and 1 pipe wide are used, a very considerable reduction in the quantity of heating surface is made. The glass surface formula usually given by Baldwin, Schumann and others, is also taken into consideration.

In open stairways a liberal allowance on the ground floor, very little on the first floor, and none on the attic, seems good practice. Corridors which do not abut on the outside wall require a very small amount of surface, not more than 1 ft. lineal of 1" pipe (⅛" of heating surface) per 100 cubic feet of air, a proportion which the best heating firms use. In churches and in hospital wards, double this quantity, always bearing in mind that these figures refer to a rapidly circulating plant.

The custom of carrying rising mains between studding in partitions and in chases cut in walls, was early abandoned in practice in public building. Pipes when carefully put up were found not unsightly, and the circulation better when in the room than in the walls. Moreover, they are more readily got at, and contribute a certain addition to the heating surface in the room.

The expansion tank used is an ordinary cylindrical one of galvanized iron, open to the atmosphere. It has three connections—one from the bottom to the furnace, one from the top to the furnace room where it acts as a telltale when the fireman is careless enough to let the water in the apparatus boil, and one at the side to a feed tank. It is placed above all the coils, and should have, say, 1-26th or 1-28th of the contents of the apparatus, so as to have room for the amount gained by the water in expanding from the temperature of the supply to 180° or 200°.

The President: I am sure we are all deeply indebted to the authors of this elaborate paper.

Mr. Helliwell: I would like to move a vote of thanks for the paper we have just heard.

Mr. Symons: I have much pleasure in seconding that.

Mr. Gambier-Bousfield: This is a technical paper that I am sure we would all be delighted to study at leisure, in conjunction with the plans. I would therefore ask Mr. Billings if he would kindly leave the paper in the hands of the editor of the Canadian Architect and Builder, who wishes to reproduce all these papers. I heartily concur in the vote of thanks.

Mr. Billings: I will be very happy to leave the paper. There must be architects in the west here who have had considerable experience in hot water heating. The Department of Public Works in Ottawa is the only one I know that gets up a full specification for heating. I understand that the Treasury Department at Washington supply blue plans—or at least white plans made by the same process—to the different firms who tender for heating.

Mr. Edwards: I am rather surprised that they find five feet of inch pipe to the hundred sufficient down in the colder section. In our practice we have for the lower flat eight, and, if very much exposed, ten feet to the hundred; for the upstairs we use six; and I have not found at any time that it has been at all extravagant in the abundance of pipe.

Mr. Bousfield: I understood Mr. Billings to have said that that would probably be the minimum, because his calculations were based upon a rapidly flowing system.

Mr. Billings: Oh, yes. If you have a large building and a cast-iron furnace you won't certainly produce anything of that kind. The great thing, of course, is to return as rapidly as possible. We use much larger furnaces than you use here—ordinary wrought-iron ones.

The vote of thanks was carried heartily.

Mr. Burke: How do you account for the tremendous difference in results in different buildings?

Mr. Billings: It is very often due to the amount of external wall surface; there are other factors, but that is the chief. There are lots of problems to be worked out. The Montreal engineers experimented a great deal on the convents—those long, rambling buildings—and the difference between the old and new buildings of the Ville Marie Convent—one heated by steam and the other by hot water—was a saving in the latter of over thirty per cent., and very much better heat.

Mr. Burke: Do you use indirect heating in your system?

Mr. Billings: No; it is all direct. Indirect heating in a cold climate is no use. We can hardly leave it to the caretaker employed on a small building to ventilate the building.

Mr. Townsend: Is there any supply of air more than that which comes in by doors and windows?

Mr. Billings: No; but in the post office you don't want any more than comes in through the doors—that has been our great trouble; we have too much air in the day time. The air is all right at night when there is electric light; but where you have gas naturally you have bad air.

Mr. Curry: There are so many factors in the question of heating that it is a very difficult question to show which is the better plan by mere statement. As far as I can see, it is almost impossible to make a fair comparison as between systems; the question has not been solved, and will not be for some time. I think, all things considered, that you must get better value from your fuel passing through the steam boiler than through the hot water boiler. Your boiler is at a higher temperature, and is therefore more likely to burn the gases than in the hot water apparatus. In the latter, in ordinary circumstances, the temperature is not high enough to consume the gases fully, and you consequently must lose that amount of heat value. (Hear, hear). Then, again, if you burn the fuel and convey it to different parts of the building, why should the one be so much more economical than the other? I will admit that for small houses hot water is more serviceable. For large buildings it is a question that depends very largely on circumstances, and on the person putting in the apparatus. There is no doubt that in a small room with one radiator in it, steam is rather a nuisance unless it can be regulated in some way, and water is very much nicer to heat it; but again, you require such a large amount of hot water heating surface that it becomes in many cases a nuisance. You can't have a room full of coils; you want to put some furniture in. (Laughter.) What I would like to know is, what has been done in a fair spirit to find out the relative value of the two systems? This question of a man experimenting with a thing to prove what he believes is all a mistake—he generally does prove what he does believe; and so it goes on. Then again, as far as hot water heating is concerned, apparently the Department have not made any use of indirect heating. I think in this country hot water heating with an indirect system is almost impossible, unless you have a man up day and night who can watch the different dampers and close the heat here and there, and close off the air, and other things. It would be almost impossible to prevent occasional freezing of the pipes, and consequently repairs; whereas with steam it is possible to heat a building on an indirect system very comfortably—far ahead of hot water in my opinion, and with comparatively little care. It has been done, and has given great satisfaction; and what has been done can be done again. As to fuel, I know that indirect steam heating requires a large amount, as it necessarily must when you bring in fresh air and warm it up; but you have the advantage of fresh air, whereas with hot water it is the same thing as stoves, heating the old air over and over again, and the amount of air you generally get in from crevices—which generally comes in from the windward side, and is allowed to pass out of the building to the leeward side. What I would like to know is, whether the Department have made the attempt to find out by actual comparison the difference in the value of the heaters as manufactured here and also in the States: and also if they have made any test on a fair basis as between steam and hot water heating?

Mr. Billings: The trouble in following Mr. Curry is that he has gone into the whole question of heating. Before going into the matter, all the best plants in the Dominion had been carefully examined, and all the work previously done by the Department gone into; tables had been kept as to the consumption of coal, and so on. There is nothing against indirect heating with hot water any more than there is with steam. As to the results with coal, you don't get any results at all with steam until you get steam; whereas with hot water, the very minute the water is even a fraction of a degree over the temperature of the room, you are beginning to gain the heat; that is one of the points on which you can count. Excuse me if I don't recollect all the things you have said, Mr. Curry, (laughter) but it was a very wide speech. So far as the different kinds of radiators are concerned, they have been very carefully tested. We have seen the test of the different kinds, but of course we would not care to say anything about it here. As you say very rightly, wall circulations take up a great deal of room; but still, on on the wall, where they are only one pipe wide, they are not so very much in the way. You can put a cap or moulding over them so that anything being pushed back won't strike them. I read in *Mechanics* of a very interesting test last winter in New Jersey, where they built two green-houses and put the same quantities of pipe in both. After laying the fire we find one great advantage in favor of hot water is, that we don't require to fire more than once every twelve hours; a man does not require

to run and see whether his fire is all right and his guage-cocks are all right; and if about the same heat is wanted it will go on all right without any trouble to anybody. In the test I referred to, the same quantity of pipe was used, and they got 26 % in favor of hot water. That is the only test I have seen recorded. It seemed satisfactory enough, but still it would not be an answer to everything. I was not sure whether Mr. Curry said that you could leave steam heating apparatus and it would be perfectly safe at night.

Mr. Curry: I know there are two steam plants in this city which can be kept running eight hours without touching.

Mr. Edwards: That is low pressure steam?

Mr. Curry: Yes.

Mr. Billings: I have seen an apparatus in Ottawa run for eighteen hours, but of course a man couldn't do it every time.

Mr. Curry: It is not a rare thing to have our hot water radiators caught in exposed positions—vestibules, or where the pipes come up near outside walls—partly through the great change in temperature.

Mr. Billings:—We don't put our pipes in walls—we keep them in the room. It is very easy to freeze pipes, I know. Of course there are all kinds of objections against hot water; and there are objections against steam. Still, I would very much rather hear any questions on the practice we have been using, than any relative differences between hot water and steam. It is really those who have made up their minds that hot water is best that we intended more to speak to. There are no better judges, I think, of whether, in an ordinary building, one kind of heating is better than another, than the nuns. They like to be warm, and they are in the house all the time, and I have spoken to a number of those that are in command of the heating apparatus, and I never yet found any of them that believed steam to be better. The Superior of the Providence Nuns, in Montreal, came from Boston, and she got Mr. Wallworth to put into the very large building a low pressure steam heating apparatus, which is magnificent so far as fitting and practice are concerned. When they went to build their other house, which was just about the same size, they had been making comparisons with steam, and they found the difference was over a hundred tons of coal in a building of the same size, so adopted hot water instead.

HINTS ON ESTIMATING.

By Owen B. Maginnis.

When figuring on special finished joiners' work, as cupboard fronts, closet fronts, doors, dressers, etc., if in quantity, send the list to the mill for an estimate, and add your own percentage of profit; if one or two only, figure on the time and stuff your own workmen will consume in making them and add profit, and avoid taking mill prices for shop prices, and *vice versa*.

If you have a job of fencing to do in the early spring, do not make the common mistake of allowing only the ordinary time for digging the post holes. It must be remembered that the surface of the ground is impregnated with solid frost to a depth averaging from 18" to 36", and it is so hard that it must be broken with a crow-bar or pick-axe, which will take twice the time to do; therefore charge twice as much as in summer time. Another thing, before figuring on digging of any description, survey your ground carefully, and if necessary use the boring rod to ascertain what sort of material your men will have to handle, and estimate according to its nature and the time you know from experience it will take them to complete the job.

If a carpenter has doors to trim up to 7' 6" high, which have common straight faced jambs and ordinary corner blocks, trimemd and molded casings, he can safely figure setting the jambs at 15 cents a set and trim at 15 cents a side complete, as a good mechanic will set 20 sets of jambs in a day and put on 25 sides of trim. Figuring wages at $2.50 per day, the builder will get a good profit.

A good mechanic will fit and hang 12 pine doors in a day of ten hours, and do them right, so with wages at $2.50 per day, pine doors can be fitted and hung for 25 cents a piece. By following this simple method of estimating labor, any builder *who knows his men* may calculate his labor very safely.

Never overrate your men, and if you are unacquainted with their capabilities as mechanics, make your arrangements so that if you can't change them for better, you may not lose by their slowness or want of skill. It would be wise to select an efficient staff of rapid and accurate mechanics and retain them while it is possible, and when you must lay them off retain their addresses, so that you may again hire them when necessary.

When approximating nails in quantity, it is wise to allow a certain percentage for poor nails, bent nails, and those lost or spoiled in driving, as this always in all cases tells.

Finally, as profitable estimating consists in providing against the expenditure of time, labor or material likely to be unprovided for, it is judicious to spend all the time possible in making allowance for small details which are absolutely necessary, and which only involve more expense and loss if not provided for in the amount of the estimate when sent in.

"PLASTER AND PLASTERING."

Toronto, February 13, 1891.

Editor Canadian Architect and Builder.

Sir,—I have just come across a book in the Public Library, No. 1319 D, entitled "Plaster and Plastering," by Hodgson, and as there are a number of statements in it that are not quite correct, with your permission I will point some of them out.

To be as brief as possible, I have not quoted the statements in the book that require correction, but simply italicised the word that shows the correction. For example, on page 11 it says that "a darby is a float," so I have italicised the word "*not*" as follows: "A darby is *not* a float." With the above explanation the reader will understand the corrections following:

P. 12.—*No* mould will finish a mitre.

P. 17.—Laths should *not* be made of hemlock, as they will often twist off the ceiling.

P. 23.—Very fine sand is *not* well suited for plastering. Burnt clay should *never* be used as a substitute for sand in plastering, as it is only a question of time when it will fall off.

P. p. 27 and 28.—Mastic should *not* be put on with a brush, but with a trowel. Portland cement and chalk would be *far more* likely to crack than Portland mixed with sand.

P. 31.—Sands for floating should *not* be formed close together. The less you have the better, as they get dry, and when you fill in between them, the mortar shrinks and leaves a hollow space between. Any room from 12 to 20 feet would only need one screed in the centre of the ceiling in addition to one running round the angle; and for floating in the wall, if height does not exceed 14 ft., one screed at the top would do, put on horizontally, and the ground at the bottom forming the other.

P. 32.—The floating for stucco should *not* be left smooth; it should be left level and true, but a good key left in it from the rule.

P. 33.—Putty and plaster for cornices (or any other work) after getting stiff *should never* be wetted or knocked up to re-ard the setting. To do so is to kill it.

P. 37.—For outside work Plaster of Paris should *never* be used, but either Portland, Medina, or Roman cement.

P. 48.—The scratching for first coat of plastering on lath work should be done the same day that it is put on, and *not left* for three or four days. The second coat does *not* need scratching.

P. 49.—There is *no trowel* used for hand floating, but a hand float.

P. 64.—Under the head of "Items," the book gives the cost of 100 yards of three coat plastering, with wages for plasterer at the rate of $3.00 per day. The total cost is $16.00, or 16 cents per yard. The conclusion is arrived at as follows:

7 bushels of lime @ 30 cents	$ 2.10
4-5 of a load of sand @ $1.25	1.00
9 lbs. of hair @ 65 cents ($5.85?)	3.15
5 lbs. of nails @ 4½ cents	22
Lathing 100 yards @ 2¼ cents	2 25
Labourer 1-5th of a day	33
Finishing, 1 days' work	3.00
Making mortar and scaffolding	1.50
Plastering, 2 coats, 1 man ⅗ of day	2.00
	$16.00

You will notice the hair is of a very fine quality if price is anything to go by. It must surely be "Plasterers' Hair," as we sometimes see advertised, and not "Cow Hair for Plasterers' Use." Then again there are no laths used, although the nails were there, and also the lather who charged his time. No putty or plaster used, and yet the plasterer finished it, or at least got paid for doing so, but it appears there was no labourer, or else he gave his time for nothing.

The beautiful simplicity of the multiplication and addition is a marvel. No wonder it was done for $16.00. As the book has been written for the benefit of young plasterers, I think it well to call the attention of your readers to the above errors.

Yours truly,

G. M. Gander.

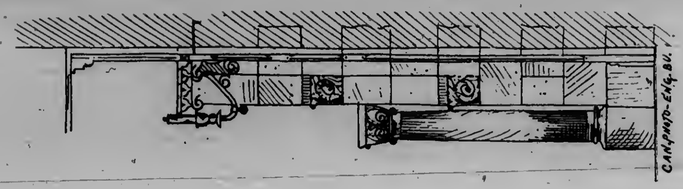
PUBLICATIONS.

A very interesting Christmas number of the *Australian Builder*, published at Sydney, N. S. W., has reached our table. We shall have the pleasure of receiving the *Builder* regularly in future.

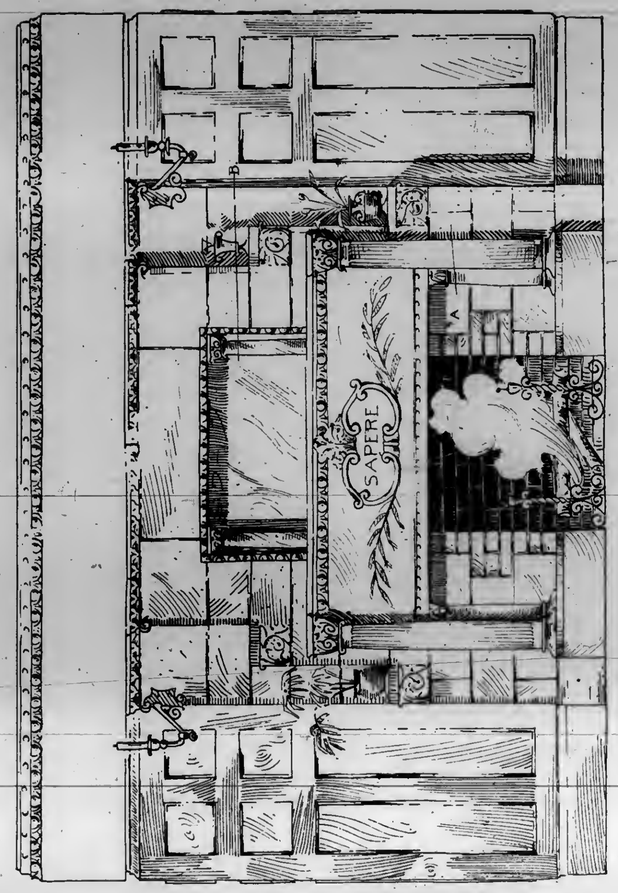
That excellent journal, the *Dominion Illustrated*, is steadily improving under its present energetic management, and is as steadily growing in public favor. The enlargement to 24 pages weekly afforded opportunity for great improvement in its literary contents, the contributors to which now include many well-known writers. Historic sketches, healthy fiction, crisp editorials on current topics, bright correspondence from London, New York, Toronto, and other cities, sports and pastimes, humorous sketches, etc., make up with the numerous illustrations, dealing chiefly with Canadian scenes, events and personages, a charming journal for Canadian readers.

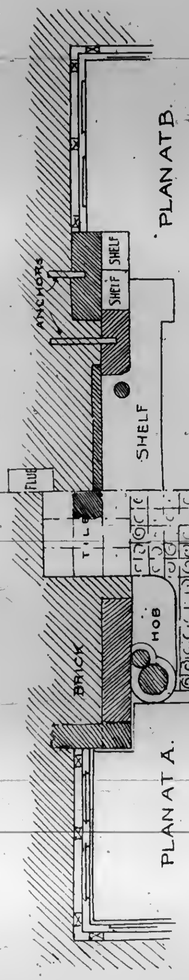
NOTICE TO CORRESPONDENTS.

If the writer of the letter signed "Plumber," forwarded to this journal for publication, will comply with a well-known journalistic rule, by forwarding his name and address, as a guarantee of good faith, his communication will be published. We cannot print anonymous letters without knowing who are the authors.



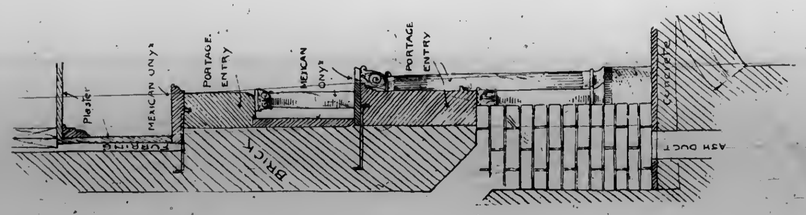
A STONE MANTEL T.A.S.C. COMPETITION BY ROCKY.





PLAN AT B.

PLAN AT A.



SECTION

TORONTO ARCHITECTURAL SKETCH CLUB COMPETITION FOR "A STONE MANTEL."
DESIGN BY "ROCKY" (MR. E. B. JARVIS), AWARDED FIRST POSITION.

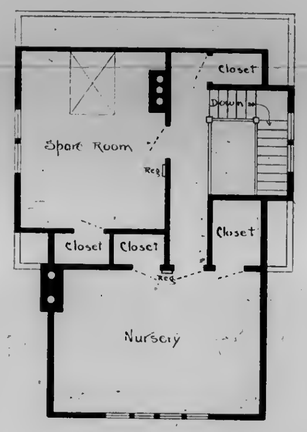
SCHOOL : HOUSE : AND : ASSEMBLY : HALL : AT : THE : BOYS' : INDUSTRIAL : SCHOOL : MIMICO : HENRY : SIMPSON : ARCHITECT : TORONTO : ONT.

CANADIAN ARCHITECT COMPETITION FOR A YOUNG ARCHITECT'S HOUSE

To Cost $4000.00

Scale of Plans and Elevations

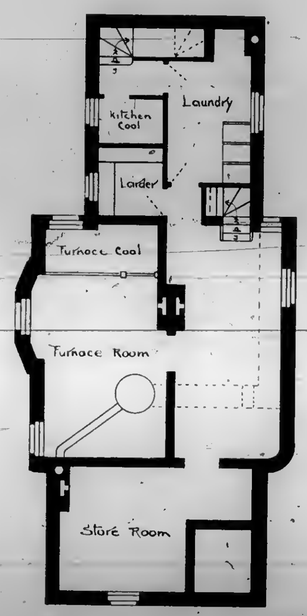
Submitted by "His Aspirant".



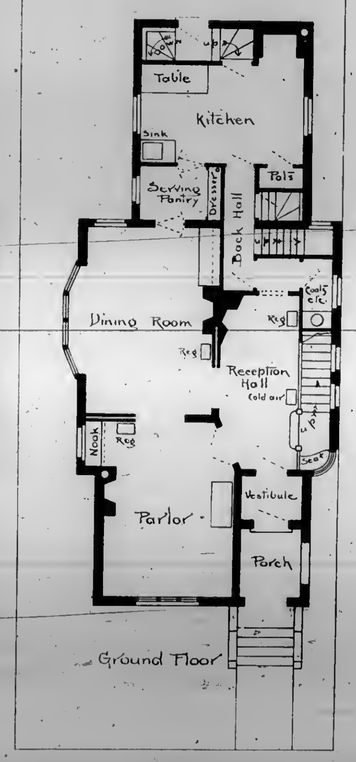
Attic Plan

Perspective View

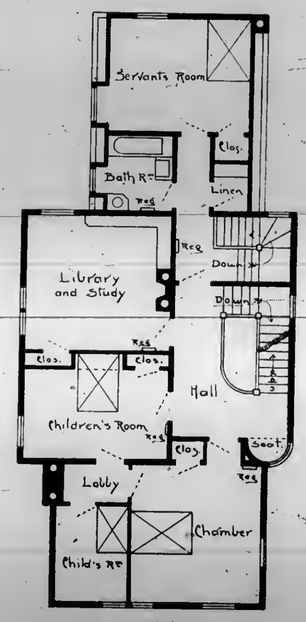
CAN. PHOTO-ENG. BU



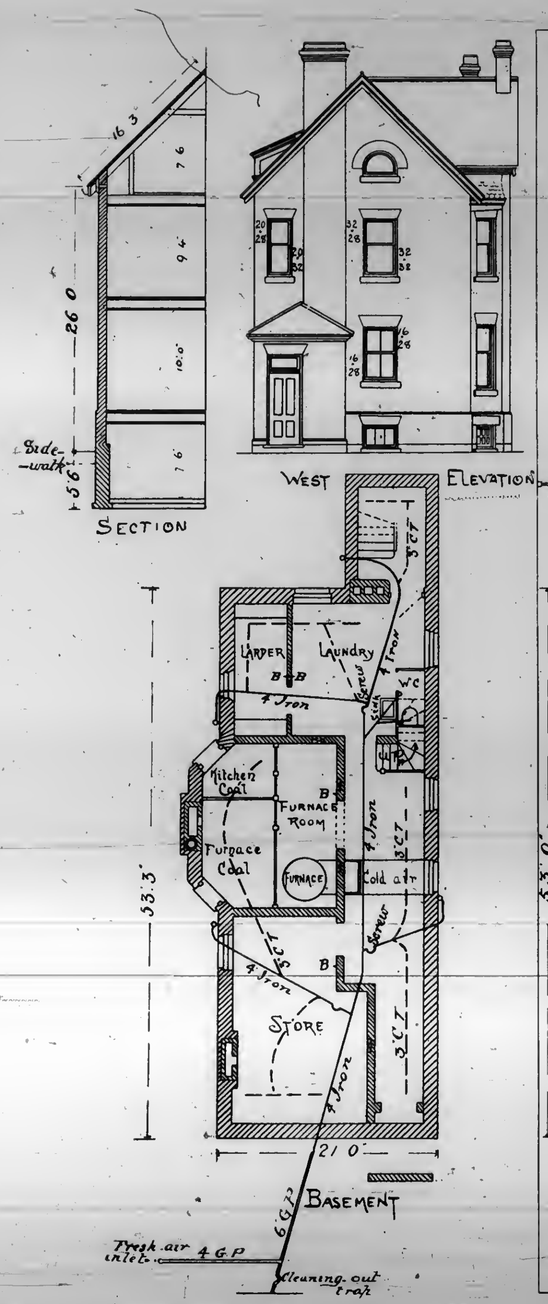
Basement Plan

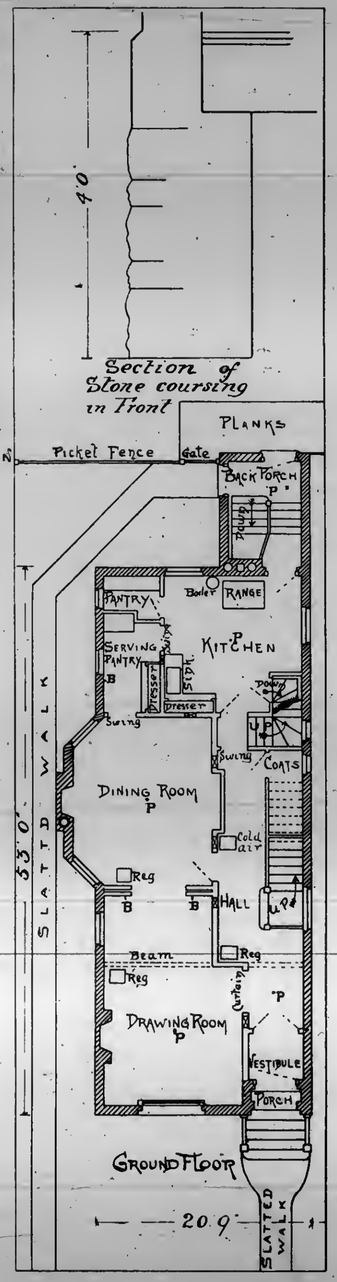


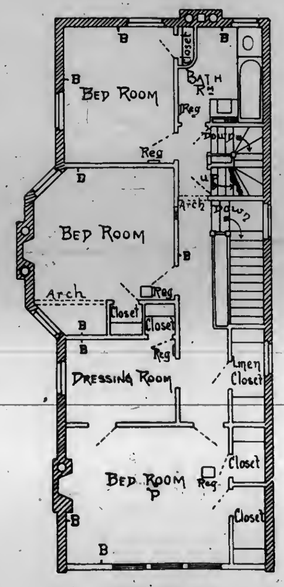
Ground Floor

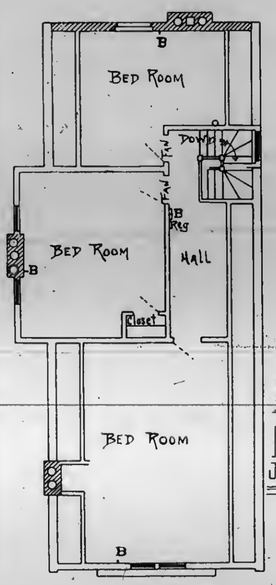


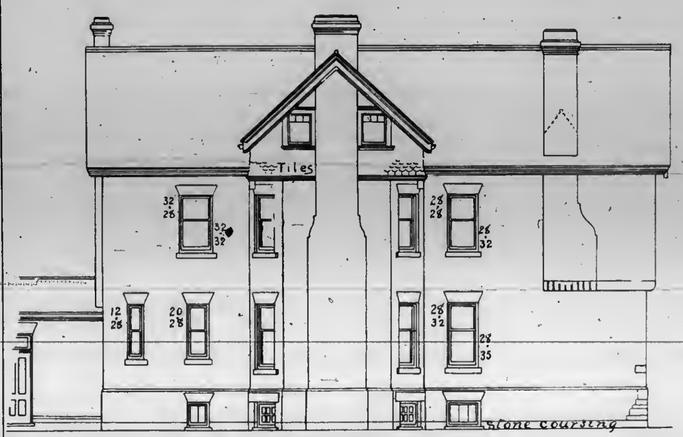
First Floor











COMPETITION
for Bill of Quantities

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CANADIAN ARCHITECT AND BUILDER.

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MR. W. C. MCDONALD, of Montreal, has placed the youth of Canada under deep obligation to him by his recent bequest of $40,000 for the endowment of a chair of electrical engineering at McGill University. Thus the means has been provided by which our young men may obtain the knowledge they require without being obliged as heretofore to go beyond the bounds of their own country. We learn that the electrical laboratories in the new building, now in course of erection, will contain all the necessary apparatus and facilities for electrical work, and the classes of the professor of experimental physics with all the apparatus at his disposal will also be available for the instruction of the students in this department.

A MONTREAL plumber addressing the plumbing class at the Montreal School of Arts, is reported to have imparted the following advice: "Improve your minds, read good books of all kinds, take the trade papers, keep posted and well up, and when an opportunity for a good position comes, as come in the course of time it must, you will be qualified to fill it, and if the best qualified you will be sure to get it. * * * Be patriotic, stick up for your town and province and country every time and everywhere. It is your country and my country and well worth working for, and if the necessities ever arise, which God forbid, well worth dying for. See to it that Canada, our country, has some of your time, thought and energy to its building up and future prosperity." This kind of thing sounds grand and inspiring apart from the knowledge that the gentleman indulging in it doesn't practice what he preaches. The patriotism which will assist the progress of this country will consist not of empty sounds, but of deeds.

THE circumstances under which the architect and contractor employed in the erection of the court house at Woodstock, Ont., were dismissed a few months ago, are probably fresh in the minds of our readers. The County Council selected other architects to carry out the work, and appointed them arbitrators to decide what remuneration the contractor was entitled to receive who had been dismissed. The arbitrators have reported that the contractor is entitled to no remuneration whatever. The contractor is not likely to coincide in this opinion, and may be expected to be heard from at an early date through his solicitors. The prediction was hazarded by this journal on a previous occasion that the county authorities of Oxford were unlikely to find that they had arrived so soon at the end of their difficulties in connection with the erection of this court house. Present indications point to the certain fulfilment of that prophecy. It cannot be expected that out of such a bad beginning should come a good ending.

THE Master Builders' organizations of the Dominion could cite a splendid *rationale* for their existence were they to vigorously take up the question of the organization of trade schools after the manner of those being so successfully developed across the border. In these days of machinery and specialization and of jealous journeymen, our youths have little opportunity to learn thoroughly a trade. Masters realize this, but seem powerless to provide a remedy. The supply of well trained mechanics is a vital point in relation to the independence of the master builder and in his ability to turn out satisfactory work. The trade schools, properly conducted, would fill this want, giving boys—sons of tradesmen, mechanics and laborers—an opportunity to thoroughly learn their chosen trade; making the master builders inde-

pendent of the tyrrany of the incompetents who so often rule the unions, and raising the technical, if not the artistic quality in a marked degree. Every city has not a Col. Auchmuty. New York may be proud of what he has done for her young mechanics. The Builders' Guilds in Toronto are wealthy enough to institute a successful commencement of the good work. It need not be looked upon as a merely philanthropic enterprise; it would pay from every standpoint, and be a wise move even from a selfish point of view.

THE suggestion made by us in our issue for March with reference to the widening of Yonge and King streets, Toronto, at their intersection, appears to have met with considerable favor, as was to have been expected, the conjested condition of the traffic in that neighborhood being patent to every citizen. Ald. Score, the chairman of the Parks and Gardens Committee, has put himself on record as being favorable to the improvement. The diagram shown on another page indicates one method of accomplishing it, giving a space from east to west between the buildings of about 140 feet, and extending from King street to the first lane, a distance of about 120 feet. A space in the centre could be reserved for a fountain or statue, and for an oasis or stand where a person could wait for a car, or take refuge in crossing the busy and crowded thoroughfare. These corners—the principal ones in Toronto—will never be dignified in appearance, and will never cease to be dangerous and overcrowded till they are widened and beautified. The increased importance of the new corners and frontages thus opened up would greatly add to their assessed value, and while a considerable portion of the cost of the work could be charged against the properties benefitted, the work would be so manifestly to the advantage of the citizens generally that there should be no serious opposition to the scheme. No time will ever be more favorable for a change than the present, the buildings being old and of comparatively little value, and we would urge the wisdom of immediate action.

IT is a matter of regret to see imposing and important buildings being erected at the cost of hundreds of thousands of dollars and with little or no protection from total destruction in case of fire. The percentage of the increased cost of fire proof construc is so slight in comparison with the advantages to be gained, that one cannot conceive why level-headed corporations with ample means at their disposal do not see their way clear to its adoption as a matter of course. Several important erections now in progress or contemplation are in fault in this respect. The new legislative buildings are rapidly assuming the appearance, internally, of a vast lumber yard. The University buildings are being largely reconstructed in the old manner, some parts, however, such as corridors, being of slow-burning construction. The stack room only of the new library building is to be fire-proof, which, should it survive intact the fearful baptism of fire that it would have to pass through in case of the destruction of the inflammable portions of the building, would be practically useless without the necessary adjuncts of reading and reference rooms. The Confederation Life Building is another case in point—of semi-slowburning type, but once thoroughly alight, doomed to total destruction with its contents, human and otherwise. Two of these structures will be so high that the most powerful stream of water obtainable would break in useless spray before reaching the roofs, and they would have to be left to their fate. We are strongly of the opinion that no building of more than 60 or 70 feet in height should be allowed to be erected unless of absolutely fire proof construction. We are glad to notice that the Freehold Loan and the Bell Telephone Companies' buildings are to be fireprooted, and time will show the wisdom and foresight of so doing.

"WHAT this country wants in law, legislation and judicial rulings is a procedure less expensive, more effective, with fewer technicalities and more common sense." With this quotation a Toronto solicitor solicits correspondence from material men and others interested in the working of the Lien Acts with a view to seeking further legislation. We quite agree with the quotation, but not at all with the sentiments of the advertiser. Why in the name of all that is just and fair should Jones have a lien on a load of bricks purchased by Smith any more than Brown who has supplied him with a suit of clothes? If Smith is getting too deeply into Brown's debt, the said Brown refuses further credit till the debt is reduced. Why should not Jones do the same? We have no hesitation in saying that the present law has fostered most loose and unbusiness-like habits of doing business. The material men will sell and give extensive credit to irresponsible men, who set up in the business of contracting with little qualification for the position, relying on the Lien Acts to protect them from loss, to the great annoyance of both owner and architect, and sometimes with great loss to the former, who, as a rule, is an innocent and unsuspecting victim. The position of the workmen is different, as they cannot in the same manner protect themselves and at the same time earn their daily bread. For their protection a very simple Act is needed, such as that in force, we believe, in Germany, where the workman has simply to notify the owner in writing that his wages are unpaid, and the amount. The owner then becomes responsible to the extent of any wage-monies yet owing by the contractor, and as this can be done every week, or each day if necessary, the workman runs little risk of loss.

A MODEL BUILDING ORDINANCE.

THE American Institute of Architects, the National Association of Building Inspectors, the National Boards of Underwriters and the National Association of Fire Engineers of the United States, recently appointed a committee to draft a model building ordinance for general adoption. The committee having met and considered the matter, report that owing to varying conditions, the task is at present impossible of accomplishment. They, however, recommend the adoption by State legislatures of the following principles essential to safe construction as a basis for local legislation:

1. That all buildings over seventy feet in height be constructed throughout of incombustible materials, protected in the most approved manner for resisting fire.

2. That interior structural ironwork in all buildings be covered and protected by fireproof material.

3. That all buildings over fifty feet in height be furnished with permanent stand pipes and ladders for the assistance of the Fire Department.

4. That the height of buildings to be erected should not be more than two and one-half times the width of the principal street on which they are situated, and that no building, or portion of a building, except church spires, should be more than one hundred and twenty-five feet high, except under a special permit.

5. That the open floor-space, not divided by walls of brick or other incombustible material, in all buildings hereafter erected for mercantile or for manufacturing purposes, should not exceed six thousand square feet, without special permission, based upon unusual and satisfactory precautions.

6. That every building to be erected, which shall be three stories high or more, except dwelling houses for one family, and which shall cover an acre or more than twenty-five hundred square feet, should be provided with incombustible staircases, enclosed in brick walls, at the rate of one such staircase for every twenty-five hundred square feet in area of ground covered.

7. That wooden buildings, erected within eighteen inches of the line between the lot on which they stand and the adjoining property, should have the walls next the adjoining property of brick; or when built within three feet of each other should have the walls next to each other built of brick.

8. That the owner of an estate in which a fire originates should be responsible for damage caused by the spread of the fire beyond his own estate, if it should be proved that in his building the foregoing provisions were not complied with. A certificate from the Inspector of Buildings shall be considered sufficient evidence of such compliance, if the building shall not have been altered since the certificate was issued.

TORONTO WATER SUPPLY.

THE Toronto water supply continues to demand a great deal of attention, and the daily papers are constantly referring either to the quantity or quality of the supply or the management or mismanagement of the water works department of the civic government.

Public opinion, or the opinion of the public, seems favorably disposed to the idea of a supply running down-hill instead of being pumped up, and no doubt if it can be got it will be a great improvement. Pure water and plenty of it should be supplied, and every householder should be made to pay for his share of the water supply as well as for police protection, street cleaning, etc. The gravitation scheme, even if adopted, cannot possibly be in operation for several years, and the water is required now. A new pipe has been laid, but not yet completed, to bring the lake water into the well at the pumping house. The present pipe, which for over 4,000 feet is only three feet in diameter, cannot let as much water into the well as the present engines can pump out of it. The present pipe has often so badly leaked at some point that bay water has got in. To many it seems a mystery how a pipe under water, but full of water, can draw water into it out of the bay. The reason is that the present pipe supplying the well is so small that before enough water can be got to flow through it to supply the pumps running at their ordinary speed, the water level in the well is about 13 feet below the level of the water in the lake. Hence the water pressure inside the pipe is less than the outside of it, and any joint not absolutely tight will permit bay water to enter. The new pipe is considerably larger than the present one, and when it is in use the water level in the well will be much higher, and the danger of leakage will be greatly reduced. Even if the new pipe should be found not absolutely tight, a very simple remedy could be found. By means of a centrifugal pump or a spiral pump, the water could be raised over on the island, and the well at the pumping house kept at a level a little above that of the bay. Any leakage then would be from the pipe into the bay. The water would be more easily lifted by the pumps, and they would work more satisfactorily and pump a larger quantity. The *quality* of the supply would then be of undoubted purity, and by running the centrifugal pump on the island at a higher speed the *quantity* could be indefinitely increased as the public demand became greater. After the gravitation scheme has been settled, as in all likelihood it will be, to be doubtful as to quality and too expensive as to quantity, then the question of additional pumping stations will be sure to be raised. From one point of view it is a wise and economical plan to have the machinery all at one point and under one management. From another point of view it is most unwise and positively dangerous.

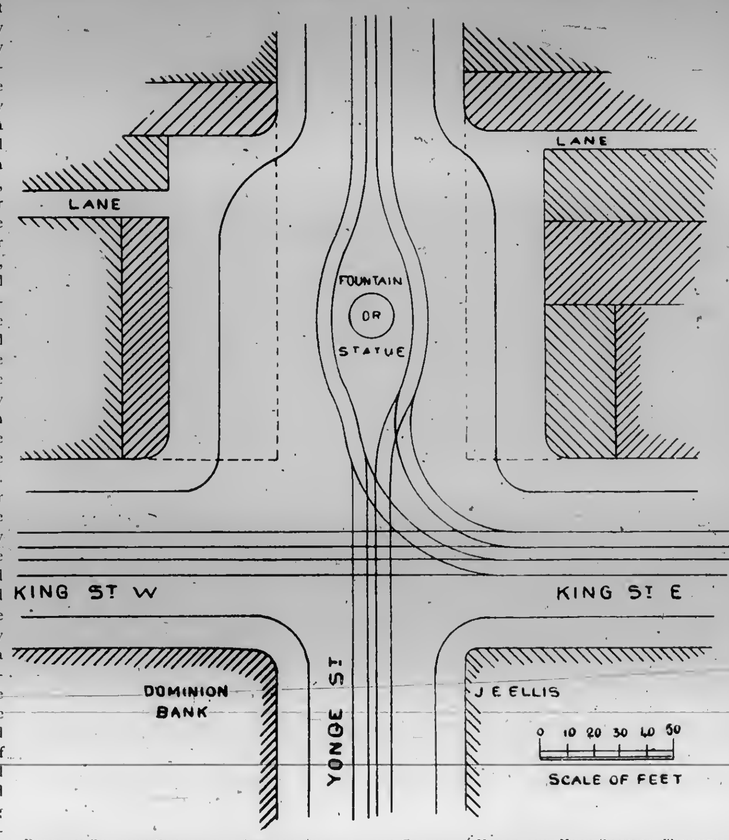


DIAGRAM SHOWING SCHEME FOR IMPROVEMENTS AT THE CORNER OF YONGE AND KING STREETS, TORONTO.

What would Toronto do for water should a boiler explosion occur at the main pumping station as disastrous as that in Quebec last month? One boiler exploding might do in a moment damage enough to destroy the buildings and to disable the machinery to such an extent that no pumping could be done for two or three weeks? Where would we get water? In some towns water is sold on the streets as milk is here. Imagine bay water carted through the streets and sold at so much per pint! There should be at least two complete and independent pumping stations, each large enough to supply the city, and so far separate that an accident or fire at the one would not injure the other. Each station should then be kept running at half its pumping power, and should one become entirely disabled, the other would be in order to go on in full power at once.

The gravitation scheme advocate says: "Get our plan and there will be no boilers to burst and no engines to break down!" That may be, but the bursting of pipes and the breaking of water channels have led to as serious results and as long stoppage of supply as ever occurred by the break-down of a pump or the explosion of a boiler.

POLISHING WOOD WITH CHARCOAL.

THE method of polishing wood with charcoal, now much used by French cabinet makers, is thus described in a Paris technical journal: All the world now knows of those articles of furniture of a beautiful, dead black color, with sharp, clear-cut edges, and a smooth surface, the wood of which seems to have the density of ebony. Viewing them side by side with furniture rendered black by paint and varnish, the difference is so sensible that the considerable margin of price separating the two kinds explains itself. The operations are much longer and more minute in this mode of charcoal polishing, which respects every detail in carving, while paint and varnish will clog up the holes and widen the ridges. In the first process they employ only carefully selected woods of a close and compact grain, then cover them with a coat of camphor dissolved in water, and almost immediately afterward with another coat, composed chiefly of sulphate of iron and nutgall. The two compositions, in blending, penetrate the wood and gives it an indelible tinge, and, at the same time, render it impervious to the attacks of insects. When these two coats are dry, they rub the surface of the wood first with a very hard brush of conch grass (*chien dent*), and then with charcoal of substances as light and friable as possible, because if a single hard grain remained in the charcoal, this alone would scratch the surface, which they wish, on the contrary, to render perfectly smooth. The flat parts are rubbed with natural stick charcoal; the indented portions and crevices with charcoal powder. Alternately with the charcoal the workman also rubs his piece of furniture with flannel soaked in linseed oil and the essence of turpentine.

ARCHITECTURE FROM AN ARTIST'S STANDPOINT.*

— By G. A. Reid, R. C. A. —

In attempting to arrange for you this address, giving some of my ideas on the subject of architecture, I have felt from the beginning that it was rather preposterous in me to speak to a company of architects on the question. The reason for this is not because I have not thought about it, but because my ideas have grown up unconsciously to myself, and have lain in such scattered confusion till now. The only indications of the possession of ideas have been the pleasure I have felt on seeing anything I intuitively commended, the disgust and pity with which I have regarded all ostentatious architecture, and the dissatisfaction which I have felt concerning the conditions which result in the erection, on the one hand, of buildings embodying all the art which wealth can command, and on the other, of those ungraceful and often even temporary shelters devoted to manufacture and living.

I believe the artist's mission should not be essentially different from that of the architect; if it were not that the love of proportion and decoration actuates men very vitally, there would be no need of the architect. The engineer would do all that was necessary in the construction of the shelter required. In the same manner, if it were not that the painter believes that the aspiration towards the beautiful is essentially an ethical quality, he would adopt the profession of the cold calculator of facts. The painter may decorate by the representation of life, and record historical phases of the same, but in all his composition he has for his model, Nature, whether he conventionalizes or not. As the painter must always observe from the point of view of effect, the architect must do so no less; both are educators through effect, though the observer is ignorant of the means by which it is produced. Gracefulness of line is little considered by those who do not habitually design, but nobility of mass is appreciated by all.

As I have already indicated, the combination of nature's forms I believe to be the basis of design, and as we enter upon the widest phase of the question of design, the composing of masses, let us ask ourselves how, and by what subtle reasoning, we feel our way. *Exactly* how, can any architect tell? Can any artist attempt to explain, except he be an academic slave? We borrow a bit, we in some round-about way grasp an idea, but who can divine the method? The formulated method for the intuitively free is like a cage for the migratory bird. Intuition develops unconsciously, and if allowed full freedom will feel its way with absolute safety, but our tendency to overcome and rectify bad conditions leads us to the evil of binding this subtlest faculty to formulas, and the institution of academic rules shows our lack of wisdom in the extreme care to be safe. As a result, we have directed and taught until we have no confidence in the science of feeling, and prejudice is our only guide. If the student be supplied with the simplest directions, teaching him to observe, and be given the material and tools with which to work, you have combined the two principles necessary for the development of his powers.

Now if we have satisfied ourselves that good taste is indispensable to any kind of good work, and if we know that what a man likes determines what kind of work he will do, the same principle applies to everything which indicates man's presence in the world—the arts, literature, science, religions, morals, governments, are all indexes of the character of men and nations. When conditions are poor, recourse is had to borrowing, and originality is no longer a moving impulse, but a cold and mechanical performance takes its place. If I were to picture to you the result of good conditions in the development of your art, I would necessarily have to describe to you an architecture, noble, diversified, and utilitarian. It would show its morality by its adaption to human needs, first, by being simple enough to avoid waste, and decorated only to emulate virtue, and stimulate the observation. When I speak of those people whose art is only borrowed, I mean the style-mongering kind, which borrows but cannot pay back, and acts like a boomerang on the workman, debasing his art until it is no longer worthy of the name. True art, however, borrows and is able to pay back, and while it recognizes the values of all styles and employs them as a mine of experience from which to draw, and to which to refer, knows that the principle by which these were originated must be retained. Now I am actually ignorant of styles in architecture, and I consider the possession of that knowledge quite unnecessary to good taste. To merely imitate and reproduce ever so purely an old style, *that* is not the mission of the sincere artist, because that within him which chooses is the inheritance of all that has preceded him, and no academic rule can teach it.

The most prominent defect in modern architectural designs is a disposition to seek a perfect symmetry, but the architect who draws his inspiration from nature recognizes that perfect symmetry is as much abhorred by nature as a vacuum. True balance is by a law of physics as much a necessity to any structure as that force which keeps the earth in its orbit is to the earth, but the placing of windows, doors, towers and gables with exact regularity is in direct opposition to the spirit of the whole outward world. The designer must of necessity avoid all such regularity if he would avoid monotony and stiffness.

The arrangement by which light and shade are grouped is as important as the grouping of general forms; in the composition of a picture the painter who appreciates his light and shade will regard a shadow cast by a figure, or any object, as having as much value as the object itself for his purpose.

Towers, turrets, chimneys, gables and roofs, if put on merely to balance, will from some point of view throw a building out of balance. I have in my mind a long structure with two small towers at the ends, and a large one in the middle, all on one side. From certain points of view the effect is that of over-balance. I remember when approaching Burges, in north Spain, shortly after sunset, the silhouette of the spires of that wonderful Gothic cathedral were to me a lesson in grouping and true balance. In passing quickly by them, they cluster from every point of view in long and short points, giving the feeling of symmetry without regularity. If the architect places with regularity towers and spires ever so beautiful in themselves, along the sky-line, the effect will be like a burned-out forest on a ridge of hills. This monotonous regularity is perhaps a still more crying evil in what I think is called landscape gardening—placing trees in rows, flower beds in geometrical designs, and cutting walks and paths by the line. Many of you have noticed this tendency in our own public gardens, and those who have been in Paris can appreciate how diligently the gardener cuts and trims, and even squares the trees off underneath.

After massing, breadth in general effect is important to the architect no less than to the artist. If the architect spreads over his design ever so beautiful ornament, the result is what a painter calls "spottiness." In painting, we illustrate the opposite of this by the pictures of Meissonier as the best examples of work which, retaining breadth, possess great fineness of detail. And although many painters long for extreme simplicity and use great flat masses of light and shade in their own compositions, yet exquisite detail is not incompatible with such, for the secret lies in keeping detail subordinate to mass. I feel that to enlarge upon this principle would possibly mar to a great degree the simplicity of the idea, but in case the terms "mass" and "breadth of effect" may sound like artistic cant, I will try to illustrate what they mean to a painter. When I speak of a "mass" of anything, it may be light or dark, and of any color, and "breadth of effect" is the result of the subordination of the markings within each respective mass, so that at certain distances no detail can be distinguished. Take for example a tree; when near to it, the eye can resolve each small mass of light and dark into separate leaves; at a greater distance only larger masses can be seen, and when sufficiently far away the eye perceives one flat mass, composed of trunk and foliage. I do not mean to say that painters have a monopoly of this principle of harmony, for all people with good taste must feel some of its truth at least, and I am sure that architects practice it continually, although I sometimes think it is too dimly understood, and as it involves color, the subject for the architect alone is inexhaustible. To the painter it is almost the beginning and end of his technique.

I will now turn to some practical illustrations of that of which I have spoken in general terms. I have prepared some rough scribblings in color, some of which show the suggestiveness of natural forms for designs of buildings, the similarity of some buildings now in existence to natural forms, *et cetra*.

Fig. 1.

This pastel is from a sketch made a few miles out of Paris, near Sceaux, and I have attempted to construct from it, in a general way, a group of buildings which might very readily be suggested by the tree shapes; some engineering modifications would be necessary, but general form could be adhered to. In the Yellowstone Park there is a low peak called "The

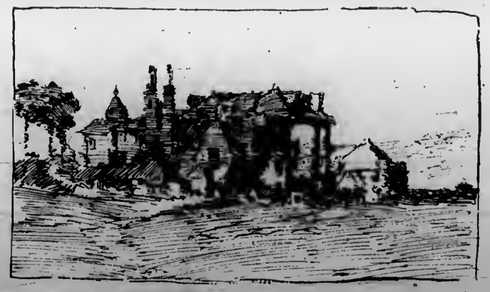


Fig. 2.

Column Rocks," a rough sketch of which is shown in No. 3. In the Sierras there are some remarkable buttes, which stand alone on a sort of plain; they suggest whole buildings, towns, chimneys and steeples. No. 4 is a design for an entrance suggested by a part of the Castle Rock in the Sierras. In interiors crypts, naves, and vaulted roofs are instances of the similarity

* Paper read before the members of the Toronto Architectural Sketch Club.

which exists between many buildings with which we are familiar and natural forms. In No. 5 is illustrated a part of the great Mammoth Cave in Virginia. No. 6 a tower in Germany, and the Cathedral Rocks, Virginia. If time only permitted, hours could be spent pointing out such examples of similarity, as well as the wealth of suggestion that still lies in Nature, waiting to be used.

For the sake of reference to the social condition influencing architecture, I will take as an example a well-known Toronto building which has noble

Fig. 3.

proportions from any point of view; at twilight its effect is especially harmonious, but in the light of day it will bear critical examination from the front only. No. 7 is from a sketch made at evening from my studio, and No. 8 a view of it from the corner of Bay and King streets. You surely do not ask me what is wrong with it! who can pass it without seeing its great blank side walls in strong contrast with the ornamented and windowed front? What ingenuity the architect has had to exercise to light it from the front and back, and with what anguish he must look upon it until the speculators

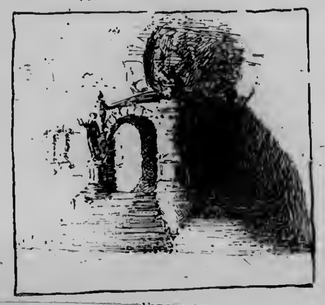


Fig. 4.

allow enterprise to raise buildings alongside to cover its nakedness. How much better it would be if they could buy the air on each side, and decorate and light the building properly. "Buy the air?" you say; "Why that would check enterprise" and I answer "Do we not check enterprise and trample on natural right as much *now* by buying *land*?" Besides, air can virtually be bought here, and it is *actually* bought in Constantinople, for the Bible house there owns the air above a large block of buildings, and its view of the city can never be blotted out, no matter how high the value of land rises.

Fig. 5.

In conclusion I wish to point out that I am not challenging either the honesty or good taste of our architects and builders. They are as helpless to create a noble architecture as our painters are to paint good pictures, while not surrounded by the necessary conditions. When I speak of conditions, I mean to say if they are not favorable we cannot expect to have any worthy art. In feudal times great castles and beautiful churches arose because the power of the feudal lord and of the church could buy all the art of the community. In its earliest aspect art was confined to the castles; then when the church became more powerful cathedrals were evolved, and, as a wider liberty grew, the public buildings and residences were more and more decorated. As we have not yet shaken off the shackles of feudalism, the workman still lies under the thrall of some power. That power is the same as was exercised by the feudal lord, although it may not be so absolute.

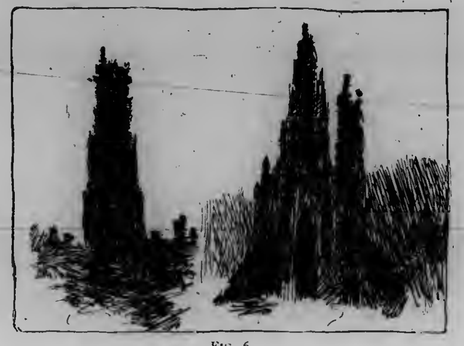


Fig. 6.

During the ages the spirit of independence has been developing, and now social reformers are demanding equality of right for all. If it is true that the more division of right there be to the absolute ownership of land, the more the power to control art and labor is broken, then there can be no doubt left that if the land is absolutely the possession of all who live on it,

Fig. 7.

the monopoly of art by a few is lost, and the tendency to beautify will be more widely spread.

Many may think that such a change in our social conditions as I have hinted at would not affect architecture, except to rob it of its patrons; that is exactly what is needed to make our arts noble.—We want no patrons—

Fig. 8.

we want an independent spirit which will no longer cringe before amateurs and men of wealth, but which, with freedom from pinched necessity, will find the possibility of refusing to prosittute its art for any consideration. Then when art has an opportunity to produce spontaneously, we can look for results more worthy of the larger liberty.

Connecting Steam Pipes to Boilers.—After boilers are properly arranged and set up, the next important point to be considered is the arrangement of the main steam pipes and their connections, for unless these are properly designed and put up, much trouble is apt to come. The points to be considered, but which are very often neglected, are to provide for the effects of expansion and also to make allowance for any settling of the boilers which may, and generally does, occur after they have been run a short time.

ARCHITECTURAL EDUCATION IN CANADA.*

By R. W. Gambier-Bousfield, A. R. I. B. A.

In undertaking the preparation of a paper on the subject of the education of would-be architects in Canada, I was conscious that I had a difficult matter before me, and as I have proceeded with the work I have not found the difficulties decrease materially. If it was simply a matter of laying down the law, and saying that a student shou'd learn this and that and follow such and such a particular line of instruction, there would not be much difficulty, but the point with us is, what a student should learn to make him proficient in this country, where he labours under some disadvantages. But when I say this, some of you may remark, "surely the standard of proficiency should be the same in all countries." No doubt that is very true, but how is it possible that that amount of knowledge which is considered a proficiency in the most refined countries of Europe, and which is only attained by years of close companionship, and consequent intimate acquaintance with, the examples of the work of all ages, and to be found only in the old world, is to be attained by our youthful aspirants who in forty-nine cases out of fifty have not the means to enable them to take even a short tour in Europe.

At the time of preparing this paper, I had before me the report of the Committee of our Association on Education, which was passed by the Council at their meeting in December last. No doubt all of you have read it, and I propose as I proceed to call attention to some of its details.

I have said that students in this country are placed at some disadvantage. European students can read, and they can then go straight to see an example of that about which they have been reading. Our students can only read, and employ their imaginations to picture for them the subjects. They have illustrations to guide them, certainly, but what is the picture of a building or the mechanical representation of a portion of it to the actual structure—the uninterrupted study of the practical working out of a conception or idea which tends to a comprehension of the reason of every feature and detail? Examples of construction they have before them, good, bad and indifferent, and a young man may become a first rate builder; but that is only a portion of his character or composition as an architect.

Our committee have rightly given prominence to the fact that an architect to be a proficient must be as well up in the art as in the science of his profession. I think I am not far wrong in stating that the majority of architects in this country have hitherto been content to study construction, and to leave style rather to take care of itself. They are, or may be, good constructors, but does that entitle them to the distinction of being good architects? The public seem to think it does, and so long as a man carries out a house or a church, or other building, in a way that it will not tumble down, the public are content. But there is a change coming—even now commencing. We have greater facilities than heretofore for visiting Europe, and for being visited from Europe; there is a greater interchange of ideas; there is a better knowledge of art and science diffused among the public; and in the near future we shall find, if we have not found it yet, that clients are not so ignorant of what real art is as previous generations of clients have been.

In general, professional men have here, as in all new countries, been more intent upon trying to make money than upon trying to educate the public. I do not blame them. What is the good of trying to educate the public? What is the good of trying to teach an ignorant client that such and such is not good style, and that so and so is? No good at all; we shall only be considered fools for our pains, and so we have gone on. But what if the public is beginning to know something about the difference between good and bad, between art and "Builders' Gothic?" What if a client should turn round upon his architect and say, "If you don't mind, Mr. So and So, I should prefer to have all the windows of my house of one date." I do not think this kind of thing is likely to happen just yet, but we are now considering education, and what our students should learn, and if this does not happen in our days, it will in theirs. Of course, there are many well educated men with whom we may come in contact as clients, and they naturally prefer to employ that architect who will make their buildings beautiful, as well as sound and substantial. Hitherto we have had too much to do with the dollars and cents. I do not mean that we have had the fingering of them, perhaps, as much as we should like, but we have had to deal with men who had, and who were very chary about parting with them, and these men have employed those who would do their work for the lowest remuneration, in preference to those who would bring to their aid the best professional ability.

And now come the questions: What should our students learn and how should they learn it? An architect has little time to spare to teach youths fresh from school the very rudiments of his profession, and yet in order that the raw material may be fashioned into something which shall be of use to him later on, he has to devote some time to looking after the young fellows. As a set-off for this, it is customary in many places for a boy who wants to be an architect (as the phrase goes) to pay a premium for the instruction he is to get from an architect. In England an architect of reputation has his choice of pupils, who are only too ready to pay large sums for the privilege of doing work in his office for a stated number of years, for as a matter of fact this is really what it amounts to. The pupil who pays a large premium knows no more at the end of his time than does the boy who has got into the office of our architect of repute to pick up what he can for himself. The matter is reduced to one of ability in the youth, having little or nothing to do with the amount of time the architect spends at his elbow. But (and it is hardly necessary to say so), we are not in England. We have to do all our work for ourselves, for there is little we can trust entirely to our clerks and draughtsmen in the matter either of construction or design, and it is often far easier to do all the work oneself, than to correct the errors of our clerks. The draughtsmen whom we can get hold of are for the most part not properly educated. They have (I say the majority of them), been "*fetched*" up somehow, not trained, and we certainly cannot spare time to teach them. We may be glad that we have at last in connection with the School of Practical Science here a chair of architecture, and that the purpose is to put boys who want to be architects through a course of instruction, and do much for them that will prepare them in part towards being of some use and towards instructing themselves when they enter an architect's office as pupils; and although we want a great deal more than we have here at present, I hope it is a step in the right direction. But let us glance for a moment upon the systems of education for the practice of our profession in Europe and in the United States, and ascertain what in various countries is considered a standard of proficiency, and what a young man must do and pass through in order to be named as sufficiently competent to practice the profession.

There is no country so strict in connection with the professional training of architects as France. The French have had an Academy of Architecture since the year 1671—of now two hundred and twenty years standing. Its establishment was in connection with the French Academy of Arts, founded in 1635 by Cardinal Richelieu. The story of the foundation of the architectural branch is somewhat amusing, and shows that the treatment we receive from the public is very similar to that meted out to architects two hundred years ago. Bernini, the Italian, was summoned by the king, Louis XV, to go to Paris and prepare a design for the re-construction of the Palace of the Louvre, but finding—no doubt through the influence of the friends of the French architects, who were much disgusted at his arrival—that there would be hindrances to his carrying out the work, he wisely decided to get back to Rome, and making some excuse, withdrew from the work. A competition was instituted, apparently without the appointment of a professional referee. Only two sets of plans were sent in (architects seem to have been wise in those days). The design of Levau was recommended to the king (history does not relate by whom), and the king thereupon decided on having the other one carried out. It turned out that this was not by an architect at all, but by a doctor, Claude Perrault. A building committee was then appointed to superintend the execution of the design, with Charles Perrault, the brother of the physician, as one of its members, and this committee was the origin of the Academy of Architecture.

"At the time of the suppression of the Academy 1793, during the Revolution, a number of semi-private schools or ateliers were organized which gave rise in 1816 to the École des Beaux Arts, which were separated in 1863 by Napoleon III from the Academy and placed under the charge of a director" and numerous professors of arts, of whom nine were professors of architecture. This school of fine arts affords free instruction to all comers, whether French or otherwise, between the ages of 15 and 30, on condition of their passing an examination, which consists of drawing, modelling in clay, and designing, all work executed in the school within a given time. Those who pass this test are then examined in arithmetic, algebra, geometry and history, and those who pass this second test become students of the second class of the school. The course of study here consists of competition in architectural design, and in construction, mathematics, drawing and modelling. There are lectures on all these subjects. The total course occupies about three years, but by this time the student has only passed through the lower school, and not then unless he has been very diligent, as the number of marks to be obtained in order to ensure success at the examination can only be reached by a student devoting all his time to study. Having passed, however, the student then goes to the upper school, where he still has to enter competitions in design, drawing, and modelling, and may take part in the annual competition for the "Grand Prix," which, if he gains it, will entitle him to a diploma, the standard of which is very high, the examination very vigorous and searching, entailng a course of study covering in all six or seven years at Paris. No architect, without having gained the diploma, can carry out a public building, and although he may engage in private practice, his clients cannot hold him responsible at law, and naturally those without diplomas cannot expect much work that is worth having. The defect of the French system is, that the art is studied to an extent that leaves too little room for the study of the science.

In Germany the system is the reverse to that in France. Training in practical work is considered of greater importance than a knowledge of the art of architecture. The student must study a year in an architects' office before entering the school, and if he aspires to the rank of Baumeister (a master of building), he must spend three years as clerk of works on a Government building before he passes to the superior branches of the school. But the man who looks forward to employment under Government must pass two examinations—the first, to test his knowledge gained in a technical school, which, if he is successful in passing, entitles him to be an inspector of government works. Between this examination and the second the candidate for government work must pass two years in the practice of his profession, either in the general work of an architect's business or in constant supervision of actual work—like a clerk of works, in fact. Success at the second examination entitles him to employment under government.

In England there is no regular school of architecture akin to those on the continent, except the Royal Academy in London, so far as it goes. A youth outside the office of his master or employer may take up any line of study he thinks best, or that is recommended by his friends. He has drawing classes of the schools of art that he can attend; he may have access to libraries from which he can borrow standard works on art and construction, and he can study examples of both anywhere in the country or on the continent in his holidays. He may be much helped by joining the associations of students, which are no doubt doing great good. There are prizes to be competed for by all comers offered by the Royal Institute of British Architects, the Royal Academy and the Architectural Association of London, on subjects such as essays, drawings, models, measured drawings of ancient buildings and designs, all of which tend to show the pupil how he should steer his course, but the standard of success in these competitions is high. A youth whose tastes lead him to study construction rather than design soon finds that he must devote equal attention to the art. The obligatory examination of the Royal Institute of British Architects, established in 1882, certainly has done good, if only in the way of giving students a line to follow and a goal at which they can test themselves and shew that they are qualified to practice, to undertake whatever may be entrusted to them. A student in England sees the necessity of studying the French language, for unless he can read fairly well, the valuable collection of works on architecture published in France during the past 250 years will be shut out from his grasp. The dogged persistency that is the character of the English has, however, enabled many a man to surmount all the difficulties in his way arising from the lack of regular schooling for the profession. A youth determined to succeed does so—he takes pains, and that is the secret of success. And England has produced and is now, no doubt, producing men who have been and men who may be classed as some of the greatest architects of the world, and there is no reason why her colonies should not do likewise if they go the right way about it. It must be remembered that architects who have risen to distinction in England heretofore have not had the advantages students now have, therefore our students may take courage.

The system of professional education in the United States has risen on an experience of the good or the faults and failings of the old world systems; and it seems to be as perfect as any scheme can be in a new country where examples of the works of all centuries do not exist. The four years course takes up a boy as he leaves school and gives him a thorough grounding in drawing, construction, in the history of the art, and in professional practice. The use of these few words as summarizing the course is an easy way of classifying a great deal of work, but in reality they represent a most complete course.

French architects are more artists than builders, because in the schools they study together with artists—painters and sculptors. German architects are more builders than artists because they study together with engineers. In England a man may be whatever he likes to make himself—a theoretical or a practical architect, or if he understands his calling, an admixture of both. In the United States the aim and object of the school is to make a man an "Architect," which means equally well instructed in every branch of his profession; and this is the evident intention of the scheme our committee have prepared for the guidance of students in Canada.

* Paper read at the Third Annual Convention of the Ontario Association of Architects.

ST. GEORGE'S CATHEDRAL, KINGSTON, ONT.

Messrs. Power & Son, Architects.

But to return to the questions: what shall our students learn, and how shall they learn? The latter question is easily answered. How shall they learn? If men for the past two hundred years or more in England, without any guidance, but with determination to succeed, have succeeded, surely our youths can do the same. If they will not learn, nothing on earth will make them. Young fellows are sometimes found sighing, "If I only knew what to study." Why, study anything; surely you can use your eyes; surely you know how to read. But they are most of them now-a-days in such a hurry to be earning a small weekly wage that they think it best to wait till some one will shew them the shortest road towards putting themselves into a position to earn a salary, rather than that it is best to make themselves proficient. I like to see young fellows anxious to support themselves, but if they are not content to give up all ideas of supporting themselves for some time to come, a profession is no calling for them. If they would be architects, they must be patient. Now they are apt to feel aggrieved that when employed in an architect's office they have to do tracings or copy letters when they think that they ought to be engaged on drawings that will give them perhaps more direct instruction, forgetting that in everything they do they will find something to learn, and that they are not at school. At school they have got accustomed to being taught—in an architect's office opportunities for learning are given to them. It is for them to take advantage of these opportunities if they want to learn.

The Students' Association here is doing good work, but it seems necessary almost to force some of the members to attend the classes that are arranged solely with the view of helping them. I need not, however, dwell longer on these points, but it is a serious thing for students in Canada to consider, and if they fail to perfect themselves in their calling, they will find too late that draughtsmen from a distance occupy the places that should have been their's.

When a boy comes as a pupil to an architect, he should possess some knowledge of the work he is about to take up. He must at least have developed some taste for drawing, and have shown that he takes some interest in building operations. He must have had a fair education, which of course includes a grounding in mathematics, mechanics, chemistry, geology, and so on; and so much the better if his opportunities have enabled him to master the rudiments of geometry, and perspective and other mechanical drawing, and if he has done something in the way of sketching.

On leaving school and entering an office he must give up the idea that he is entering a higher branch of his school. Here it depends upon himself to keep up and improve his knowledge on many subjects of vital importance to him as an architect, but for the study of which he will have little or no opportunities given him in the office. He must draw, and draw constantly. He must read both in French and English, if not in German. His drawing must be both mechanical and freehand, and his reading must be on the history of the art, on materials and their application. He must familiarize himself with the characteristics of the various styles of architecture, and he must practice design and devote some time to the study of planning. It has been said that the plan of a building proves the skill of the architect, rather than the elevations. When a man builds he generally prefers to have his home arranged to suit his comfort, rather than to attract the notice of passers-by by an elaborate edifice without the comforts of good planning.

In the study of planning, a student must know what are the requirements of the class of the man to which his supposed client belongs, or if he is planning a public building, he must find out what are the necessary contents, and he must have some idea of the pranks and freaks of sound before he can design a church or public hall. One sees young fellows planning houses, with no doubt an idea of what in their ranks in life constitutes domestic comfort, but with little idea of construction, and the moment you ask, "How do you propose to roof that in?" the very complete domestic castle becomes an impossibility. To plan well, a youth must have a knowledge of materials, of sanitation and ventilation, and must know where to use iron or wood, stone or brick constructively. I do not mean to say that he cannot begin to plan until he knows all these things—if that were so, it would be many years before he made an attempt—but planning brings to the student's mind these and many other matters; and practice in planning gives him experience in all these things, so that in no case should this subject be neglected.

Drawing, as I have remarked, should be mechanical and freehand, but that is hardly definite enough. Freehand drawing consists of many kinds—drawing from the round, the flat, from the life, taking the subjects from animal and vegetable life. Ornament is an important study, but one that necessitates great freedom of pencil and a trained eye. Every style has ornaments peculiar to it, and therefore characteristic of it, and although it is easy to get a carver who has made a study of ornament to design and execute your caps and panels in proper character, yet so much at least of the work will not be your own if you do so.

Ornament certainly includes color decoration, but it can hardly be necessary to urge a certain amount of study in color, when there is nothing either natural or artificial that is without color, so that if a student thinks he can do without color, he must find some other world to practice in. All cannot be picture painters, neither is that necessary, but a knowledge of the proportions in color, exercise in the application of colors, tones and shades, is decidedly so. If you can get your decorator to work out a scheme for you, why not employ at the same time an army of specialists—heating and ventilating engineers, artists, iron workers and so on, as well,—and then employing them to do the various parts of your works for you, you need learn nothing at all.

It is quite true that supervision takes up so much of an architect's time that he cannot find time to work out his own schemes of decoration and so forth. This, however, is one of the evils that we hope in time to have done away with, and perhaps when the students for whom we are suggesting a course of study come to practice for themselves, clients will have learned that it is for their own interests that their architects should have all the time they need to elaborate their designs entirely, and to employ a clerk of works to look after the mechanical work in execution.

But besides all that is contained under the heads of design and construction, there are other things to be learned of no less importance. An architect has to write specifications, reports of all kinds, to make up statements of the cost of various schemes. He must be a man of address, with a polish of manners. Reading and writing are essential studies—not mere penmanship, but composition—to be concise needs practice. Fluency of speech is also of great importance, but that there are so few really good speakers shows that it is an accomplishment not easily attained. Spelling and dictation should be practiced; writing essays should be encouraged; and the student must not overlook the importance of grammar, both for writing and speaking. These may appear to be elementary, but does not every kind of success depend upon the kind of foundation that is laid for it? If a man's rank in life does not provide him with a polish of manner, education will do a great deal for him.

With regard to examinations, I would urge that the preliminary one at any rate should not be too severe at first, although the final one, which is no good at all unless it is one that will thoroughly test a man's qualifications for practice, must be fairly searching and complete. We do not want to frighten our students or to trouble them about matters that present students have little or no opportunity to study. Periodical examinations should be encouragements—they should be mile stones on the way to the final, by which the knowledge acquired in the intermediate periods can be tested; they should be arranged with a view to showing a student what he should accomplish at each stage, and they should therefore be no harder than necessary. They should be an assistance rather than deterents.

Our Council has wisely arranged an "Honor Course," by which it is meant that certain subjects should be taken up only at the final examination, and only by those who are specially interested in them, and desire to qualify therein. These subjects are especially levelling, quantities, acoustics and modelling; but they should, I think, be extended to include special subjects of design, construction and decoration. As in France and Germany, the best work will only be entrusted to those who attained distinction through passing the most complete tests, so it should be with us; but there should be some special attraction, such as a valuable prize and diploma, which should mark the successful candidate and give him a distinction above others.

If we make our examinations too severe, we shall fall into the error other architectural associations have fallen into, of discouraging students, and this to an extent that will nullify the benefit of our Association and leave room for the formation in the future of a rival society that will more nearly meet the necessities of would-be architects, and which will take the wind out of our sails.

In conclusion, let me say that in my endeavors to bring this matter particularly before this congress, I am conscious that I have given it a very cursory treatment, and that it deserves more than it has now received, but I trust that the inadequacies of my paper may be in some way made up for by the discussion that I hope will follow.

DISCUSSION.

Mr. Gordon: In rising to move a vote of thanks to Mr. Bousfield for his excellent paper, in opening up this subject, I would like to ask you if the Council have arranged the curriculum of study and examination for the various students in the various years? What has been done in that?

The President: I am hardly prepared to answer that question.

The Secretary: The question has been taken up to some extent, and what has been done was published a month or six weeks ago. Although the matter has not been fully determined upon by the Council, they have published this as the statement of what has been done so far, with a view of ascertaining the feeling of the other members of the profession upon the subject. (Reads outline of studies, etc.)

The President: Does that meet your requirements, Mr. Gordon?

Mr. Gordon: Yes, that is what I wanted placed before the meeting.

The President: That was the course Mr. Bousfield mentioned in his paper; it has been fully determined upon.

Mr. Darling: I decidedly think the question of design should come into that honor course. It is very much higher than levelling and such things, which only touch on our profession, but are not a part of it. (Applause.)

Mr. Billings: Has this outline been determined upon by the Council, and is it to be considered by this meeting?

The President: These have not been finally determined upon. The whole subject is in the hands of the Council, and will be further discussed by them.

Mr. Billings: Is any discussion allowed at present on the subject?

The President: Oh, yes.

Mr. Billings: Many of the members of the Institute at Ottawa did not understand why two languages should be required of a student. In Ottawa, though we have both English and French people, none of the architects write specifications in French, nor do they use two languages at all. Even French contractors find it easier to read the specifications in English. The Ottawa architects thought French might be a very good thing for a student to know, but wanted to know what the ideas of the Council were in placing it on the list as a necessary subject for students to pass on. Another thing that they did not understand was why these particular kinds of architecture should be specified for intermediate examination; they thought it was rather old-fashioned kind of work, and that almost any examples from any architectural work, that had been carefully measured or copied, would probably do just as well, as long as they were chosen well. They thought Norman might do as well as Decorative, and Byzantine would do as well as Perpendicular. Then, again, "one set detail construction of roof, traced, with joints and iron work drawn to large scale." Now, iron roofs are things that a student, as a rule, in his second intermediate, is hardly up to.

A delegate: It is a wood roof.

Mr. Billings: It says "with joints and iron work drawn to large scale."

The President: There is a certain amount of iron work—bolts and straps.

Mr. Billings: Still, a man might have a roof without any iron in it at-all. (Laughter.) There is one thing the Institute are very anxious to learn about—

Mr. Curry (interrupting): How does it come that two members of the Council in Ottawa are members of that Institute, and this matter was settled when those members were present, and they know as much about this question as we do? There is an impression that the Toronto members have done something without consulting the Ottawa members. Now, there has been nothing done whatever as far as I know. (Order, order.)

The President: When one gentleman has the floor he must

be permitted to end his remarks before any other person rises to answer. (Applause.)

Mr. Billings: I am not in the habit of addressing public meetings, and probably Mr. Curry has misunderstood me. I don't recollect saying anything about the Ottawa directors; I had no intention of doing so in any way, because the Institute is not connected with the Council in any way, although they may sit in it. There are 18 members of the Institute in Ottawa, and two of them only are directors, and it is competent for any of these men to ask any question; and as I happened to be the only one here they have asked me it I would kindly get this information. (Hear, hear, and applause.) Mr. Arnoldi said that these details, though he understood them in a certain way, were not positive, and as a large number of the Council are here, I thought I could get the information first-hand. One thing they want to know particularly is this: Any architect—whether he passes through any course or not, so long as he called himself an architect—has been allowed to register himself up to a certain date. On the other hand, students who were bound by articles at the time this Bill passed, so I understand, are required to pass examinations which they never expected when they entered upon their articles—which it strikes me is very unfair. The idea of the Institute was, that all those students that had been articled previous to the passing of the Act should be allowed to go on and pass through their course precisely as they expected they would have done when they went in as novices.

Mr. Edwards: I rise to second Mr. Gordon's motion of thanks to the essayist. I think the discussion on this matter of examination is all out of order. I wish to ask if it is in order to discuss this matter, or the paper which we have heard?

The President: This code of by-laws are under the government entirely of the Council, but at the same time they have been published and sent around to each member of the Association with a view of opening the question.

Mr. Rastrick: I beg to say they have not been sent around to each member of the Association.

The President: I understood so. At the same time, we don't want to do anything in a corner, or opposed to the wishes of the Association (hear, hear), and as the matter has been introduced now, I think it is only fair that we should hear an expression of opinion on these matters if they are at all objectionable to the Association. (Applause.)

Mr. Gambier-Bousfield: I may say that the object of this paper was simply as a basis for discussion on this very subject.

The motion of thanks was then put and carried.

Mr. Bousfield, in responding, said the questions discussed in the paper should be well threshed out. There are several things in that paper that might well call forth a discussion. Mr. Billings brought up the question of languages. Now, what I said there was that if you don't learn French you shut yourself out entirely from that splendid library of works on architecture in the French language which has been collected for the past 250 years. (Hear, hear.) It is all very well to learn only French in the Quebec province, to speak to the workmen and that sort of thing, but we want more than that.

Mr. Langton: The comparison Mr. Billings makes between students being compelled to pass the examination, and architects, is not a proper one, because an architect in full practice could not very well be required to stop his practice in order to learn subjects which he had not previously learned, in order to pass an examination. It would be an injustice to him; but to a student whose principal object for the first years of his entrance into the profession is to study, it is far from doing him an injustice—it is an advantage to him and to the country—to be compelled to take a little better course than he would otherwise have done. (Applause.) One great desirability for French is that now-a-days every man sooner or later goes to the continent; and he is shut off from a great deal of convenient intercourse if he cannot speak that language. There is hardly any country in Europe in which a man cannot make his way with comfort if he has a certain smattering of French; and for a student to go alone—as he very often does—into a country where he cannot communicate with the natives in any way, is a great hindrance to him, to say nothing of the fact that some of the best works on architecture are written in the French language.

Mr. Townsend: The amount of French or German required of students is only such an amount as is equal to the examination of the second form of the Collegiate Institute—which is a very small amount; just enough to give the pupil an opportunity of continuing the study. He may drop it after the final examination, for anything there is upon the order, if he wishes to. As to the particular classes of examples required, these are simple papers or drawings calculated to show that he has covered a certain amount of study of existing examples of work. It can make very little difference as to what particular examples he studies, or what particular style, so long as that studying is done; and I think early English and Decorative work covers the ground pretty thoroughly.

Mr. Bousfield: I don't know why Norman is left out. Is there any particular reason for that?

Mr. Darling: It seems to me it would be better not to say that they would have to do certain things as definitely as apparently it speaks of them there, but to say that they are liable to be examined and to be asked to send in sheets of drawings touching upon certain things. It makes a man cover a much wider range of ground than to be asked for certain things. In accordance with that he may say, "Well, I am only going to look at early English, Decorative and Perpendicular—I am not asked for anything else."

Mr. Townsend: Those drawings are not to be made at the examination—they are work that he does beforehand, and that he brings in to show that he has covered a certain class of work. You cannot ask him to bring in indefinitely three or four classes of work, because he may be doing bad work instead of good.

Mr. Darling: I understand that; but the papers are asked for the final examination.

The President: No, they are for the intermediate examination.

Mr. Darling: Would it not be advisable to have something more definite as regards architecture proper? There is nothing said anywhere that he is to study the whole of the orders of architecture and all the different styles thoroughly and well, and he is liable at any moment to be put through a severe course of examination on his final on all these subjects. It does not seem to me that it is definite enough. There is nothing here said that you can ask a man at his examination, and he certainly ought to have that at his fingers' ends. It seems to me this is not definite enough as to that. There is not enough about architecture. (Hear, hear, and applause). It seems to me, from what little experience I have had, that men are trying in this country to design exactly the same as a man might try to write Latin prose without having learned his Latin grammar. It is the whole trouble all through—it either runs too much to the artistic side or too much to the engineering side. There is a great deal of architectural grammar that ought to be learned, and examinations ought to show it. (Applause.)

Mr. Paull: The prospective education seems to be well thought of, and of benefit to those who are likely to be architects for the future, and all very necessary; and it shows that the Council have given to this their very careful consideration. As to the students who have gone into offices without expecting an examination, I have every confidence in the Council, that they are men of liberal sentiments, and will do justice to those students as they would to their own sons or for any other members, so that we should be safe in their hands in any matter of that sort.

Mr. Curry: This discussion is the result of bringing up a matter that has not been properly digested. At the last Council meeting we had considerable business, and the session ran over two days. This examination question was brought up, and we were having any amount of discussion and were not getting ahead; and the result of what we did was this paper the Registrar has read. We had to arrive at something, and that something resulted in this. The Council has no intention of carrying these things out, as far as I know. I certainly have not. But it is the desire to work a little further. We have to have a foundation, and what was done is just a step towards the end. As far as the examples that have been asked for, that was simply thrown in to show what sort of paper would be required, so with that drawing to rule. This examination was, in a sense, proposed to be an examination for a continuous course; but that examination would not be similar throughout—it would be changed each time. Then as to students; in preparing that course we were considering those who should enter the profession from now, not the students who are now in. Of course, whatever is done, there is no intention of forcing students through a regular systematic course who have already entered the profession as it stood in the past, and who have now advanced some years in it. To such it would be somewhat of a hardship to go through that course. The only intention is to have the first examination reasonably fair; the next one somewhat stiffer, and so on, until we have the final examination of students who entered knowing exactly what they were expected to do. The student who enters now would know exactly what he would have to do, and it would be no hardship to him whatever. The examination of draughtsmen or students who are now in the profession, or have been for several years, will be made as light as possible, but at the same time they must show that they are reasonably good men. We don't propose to have an examination which means no examination, but at the same time we have no intention of putting the screws on too hard, or holding candidates back and making them go through a course of study which they never supposed they would have to pass through. Still, I agree with Mr. Langton that it would be to the student's benefit even if he were asked to go through such an examination; but I don't think it would be altogether fair. I think we are agreed that students should be able to understand French or German. French would be the more advisable of the two. Then as to the honor course; it is not, properly speaking, an honor course. Some thought that there were questions outside that some students might like to take up, which could not reasonably be put in the regular course; hence the so-called honor course. Then as to whether the examinations are engineering or artistic, I think we can all have but one opinion, after all—we are hardly examining a man on his artistic abilities. We certainly teach him as much architecture as possible, but the principal thing is that a man should have a thorough training in what are really the essentials of good construction, planning, and so on. If a man is entirely without artistic qualities, I think we can hardly train him into artistic qualities; but it is possible to take a man with some artistic qualities and train him to a knowledge of mathematics to some extent. I think it is agreed all round that it is almost an impossibility to examine a man in such a way as to ascertain his value as to artistic accomplishments, as you can with mathematics. There is a general consensus of opinion as to what is art, but it is not a question that can be argued down to facts, as construction, science, and kindred branches can be. This outline is only a suggestion of what the paper should be.

Mr. Paull: I see no provision in this draft for the recognition of those who had articled themselves, and perhaps filled their articles.

Mr. Rastrick: This matter of students having entered upon their pupilage before the Act was passed is a serious matter that we ought to make some provision for. As to French, no architect can ever advance in his profession unless he knows it. I have never been able to obtain a notion in any course—except in a few Italian books that I have read—except the French. The French are better grounded in their knowledge of architecture. Their system is one that you cannot lay on one side for a moment. They are scientificially written, in good language, and you get ideas from them that you would not get from any other. I don't know but that there are German works of vast value. Although I could only spell over the words and translate them gradually, I derived some practical information from them. The Germans are more constructive, and they are better educated in a scientific manner. They make the most abtruse calculations on things that we would just look at and sketch, and they lay them down admirably and mathematically to a scale. It is not necessary that you should be a very great linguist to take advantage of the works in these languages. I never could translate French rapidly, but going through gradually I derived great advantage from it.

Mr. Langton: Is it in the discretion of the Council to make any distinction between students who were articled some time ago and those who are just beginning? I understand it is a provision of the Act that a student should pass the examination, and it does not seem to be possible for the Council to have any variation in the examination so as to admit some students easier than others.

The President: I think it is quite within the province of the Council in their judgment to set up an examination upon any basis they may think proper; and they have set up this year's examination much more liberally than next year's, and the next year much more severe than that again. It is quite within their province to do so. I for one am very much in favor of allowing as we have been obliged to do in regard to those in actual practice. If we had asked for an Act cutting off any that we thought were not qualified to practice, but who had been in practice for a few years, and established in business, and were making a livelihood out of it, the Government would not have granted it. In the same manner we cannot cut off the amount of time that the students of the present day have spent in preparing themselves under a certain regime that has now passed away; it would not be right and equitable; so that I think our first examinations should be as liberal as it is possible to make them, to bring up gradually the highest standard. Section 24 of the Act refers the matter to the Council, who have to prescribe the examinations.

Mr. Edwards: When these examination items were arranged, the matter of the extent and the breadth of the examination was talked of, and it was deemed that those gentlemen who got up these examination papers from time to time would be then able to say to what extent the examination in any subject should go, and while this brief synopsis of the examination may appear imperfect, I think that would cover the ground which some of the speakers here have desired to cover. That explanation will perhaps account for the brevity and apparent carelessness of this examination paper.

Mr. Darling: I don't want to criticize anything, but I would suggest that it may be wise in a thing like that to state certain books that it would be well students should devote their attention to.

Mr. Edwards: It is under consideration now.

Mr. Darling: I think it would be well to give them wider suggestions as to design, and as to their reading. I don't think we can make that much too wide, if you consider that that will fall into the hands of a student in a small country place whose master has not much opportunity of coming into contact with other members of the profession, and he himself cannot help him very much. He has nobody to look to, and may have no one that he can write to. I would let that be so wide that it might seem disagreeable; but give him all the information he could possibly get—the more information you give him, the more satisfactory it would be all round. A little too much information is a great deal more satisfactory than too little.

Mr. Bousfield: The examinations should not be looked to as bugbears; they are milestones to show a student what he should know at a certain time, and to give him an idea of what he should take up. It is not the intention to get up an examination to hinder the students; the great idea is to help them. As far as the Ottawa students are concerned, I think they make a great mistake in thinking for a moment that they could not pass the examinations. As Mr. Langton said, it is a very great benefit to them and to the society as well. When we are instructing young men we are doing it for the public benefit as well as their own, and if men are to be architects they have got to learn that it will make them proficient. When I was a student in England, I was only too glad when I found I had to pass an examination, because then I had a definite object of study, and that is just what these preliminary examinations do.

Mr. Billings: I could'nt say that the Ottawa students wanted to dodge any of the examinations. I think, as a rule, they will all want to pass them. The only thing is this, that the objection was made by the members of the Institute to taking away any vested rights which those students might seem to have—when a youth entered on a course of study on a certain understanding, he ought to be allowed to go into the profession on the same understanding as he entered.

The President: I don't think that is a question that we can take up just now, because what is the use of our forming an Association with the idea of elevating our profession and bringing it up to a higher standard than it at present occupies before the public, if we are to allow continuously those who choose to enter as students, and think they have only certain things to do, and who attend offices two or three hours a day, and play the rest of the time? We have started this Association with the view of bringing up in the future a set of men who will be educated in their profession—fully equipped for the battle of life in that profession, more conversant with every branch of it, both scientific and artistic; and if we don't succeed in that, we had better drop the Association entirely. (Hear, hear). My view is to allow those now in the profession to pass through as liberally as possible; but every student hereafter entering the profession must come through the door of an examination or the qualification as here laid down. An idea has been in the minds of some of the members of forming a circulating library of architectural works that shall be useful for the country students. They shall pay a small fee for the use of the books, which can be sent backward and forward by book post, so as to afford them opportunities of reading up and educating themselves in the different branches of the profession. (Hear, hear, and applause). Of course, that is hardly necessary in the city. A number of members of the profession have very good libraries of their own, and we have a number of good works in the Public Library, and we have opportunities that do not exist in the country towns; and this library will be almost exclusively for the benefit of the country students and younger members of the profession.

Mr. Gordon: Would it be in order to make a suggestion—somewhat on the line of Mr. Darling's first suggestion—that is, that the artistic element should be more largely represented in the examinations? I notice in the first examination there is nothing upon the question of perspective, which is the first element in designing; and I would suggest that you should have linear perspective added in the first examination; that in the second intermediate examination you add shading, and perhaps color; and then in the final examination add an essay upon the principles of design—something that would to a certain extent meet the great lack which there evidently is in the subjects of the artistic element.

The President: A very good suggestion.

Mr. Knox: I was about to make the same suggestion, and that is, too little attention has been paid to the artistic element. Supposing a young man passed through the various examinations there enumerated, they will become first-rate constructors; but I know the leading designers both on this continent and in England, and I must say that so far as the knowledge of construction goes, it is very small indeed. I therefore hold that the two go sometimes together, but usually they drop pretty widely apart; and I would therefore say that in your examinations you might have it so that a young man could pass an examination as a designer, and come forward as an architectural designer or artist, while the other young men might come out with their construction and become architects in the sense which you have prepared these examinations for. I think it is is only fair for both sides of the question.

Mr. Darling: I want to put myself right. Both Mr. Gordon and Mr. Knox said I have been speaking on behalf of a more artistic element. I am not speaking of the artistic element at all. What I did speak of was the lack of the architectural element. (Hear, hear, and applause). I am down on this running off on the artistic element constantly; there is too much of it; what I want to see is more of the thoroughly arebitectural element.

Mr. Knox: I want to correct myself; I meant the architectural element—the designing, not the mere drawing—the design.

Mr. Gordon: And I may say the same. (Laughter).

Mr. Bousfield: It shows the necessity of learning how to speak—to say what you mean. (Laughter).

Mr. Billings: Is it the intention of the Council to award certificates for students who pass well in drawing from life, etc.? Would the Council give them any points on examination?

The President: In answer to what I understand Mr. Billing's question to be, I would say that what he refers to does not come quite within our curriculum. That relates more to an examination in the Royal Academy. (Hear, hear). There they form classes for drawing from the nude, and so on, and the higher branches of art. It is something we have not taken into consideration as yet.

Mr. Bousfield: It is taken up by students' associations.

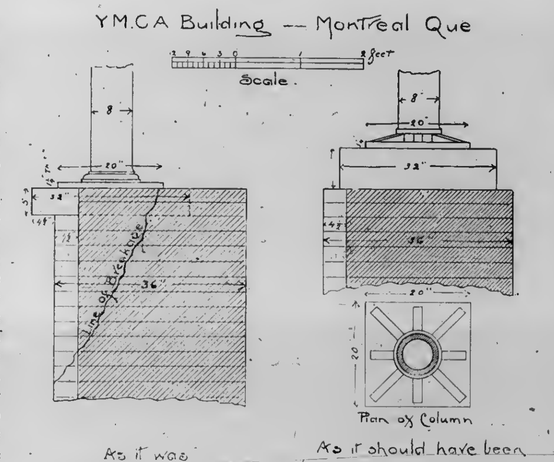
The President: I think we have had a very full discussion on this very able paper of Mr. Bousfield's, and I may on behalf of the Council, thank you all for the suggestions that you

have offered. There are some very valuable ones. I think those latterly given by Mr. Gordon are very good, and we shall take them into consideration, and those also from Mr. Darling and others. I thank you very much for the attention you have given to the paper."

ACCIDENT TO THE Y. M. C. A. BUILDING, MONTREAL.

THE accident to the Y.M.C.A. building at Montreal last week has demonstrated the old proverb that the strength of the chain is only equal to that of its weakest link. The experts appointed by the Building Committee are preparing a report upon the condition of the whole building and as to whether the plans and specifications provide adequately for the safe construction of the building. Doubtless they will be found in the main satisfactory, and it is just possible that the late accident may have resulted from a departure from the plans.

The information which has reached us is somewhat meagre as to details, but judging from the cuts which have appeared in the local papers, the construction of the supports of the column which first gave way exhibits an amount of ignorance of the laws of safe building which should relegate the parties responsible to positions calling for a different order of intelligence. Not only was the column set upon the side of the supporting pier, but the column block 32 inches square was only 5 inches thick, while the iron base plate was about 20 inches square and only 1¼ inches thick. Possibly if the pier had been very solidly built and central with the weight above, nothing serious would have occurred but there would even then have been the risk of both iron plate and column block splitting in the centre, allowing the column to sink into the heart of the pier; in fact it is quite probable that the trouble first began with the breaking of the iron plate and the bearing stone, upon which the column gouged its way through the brick-work of the pier, crushing off the wedge-shaped piece shown in the illustration.



No stone bearing heavy weight should be less in thickness than 1½ times its projection beyond the bearing of the weight above it, and an iron plate of the above thickness should have been stiffened by iron ribs or brackets.

RED EXUDATIONS FROM BRICK.

HAMILTON, Ont., April 6th, 1891.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—I see by your weekly CONTRACT RECORD of the 4th inst. that the National Association of Brickmakers of Memphis have been discussing the above question, and a chemist proposes several remedies. From observations of my own for several years I have come to the conclusion that the best remedy for the above is to let it alone. It appears only on new buildings, and only on those which are built in the latter part of the season, or fall of the year. Let any one examine the brick-work before or at the time this efflorescence is upon the face of the brick, and he will find, perhaps, finger marks, specks of mortar and other dirt, but on examination a year later it will be found to be without specks or marks, and clean as a new pin.

I regard it, therefore, as a benefit rather than a detriment, and think it must be the result of the action of some substance of the nature of soda.

I have not written the above from a scientific or chemical standpoint, but from actual experience and observation of results in this locality.

Yours truly,

WM. HANCOCK,
Contractor, Brickmaker, &c.

TEST OF FIRE-PROOFING MATERIALS.

AN interesting and instructive series of tests of fire-proofing materials was recently made under the direction of Messrs. Andrews, Jaeques and Rantone, architects, of Denver, Colorado, in connection with the erection of the new Equitable building in that city. Three tenders were received for the fireproofing of the building. In the case of the two lowest tenderers the material proposed to be used was fire-clay. The third tenderer proposed to use porous terra cotta, and put in the claim that this material was of superior quality to that offered by his competitors, and consequently that it deserved to be accepted at the extra price. In order to establish the truth of this claim, he requested that a test of the materials be made. This suggestion was acted upon with the consent of the other tenderers.

The tests were conducted under the following heads:

(1) A still load increased until the arch breaks down; (2) Shocks, repeated until the arch breaks down; (3) Fire and water, alternating until the arch breaks down; (4) Continuous fire of high heat until the arch is destroyed.

Following is a summary of the results:

STILL LOAD TEST.—Arch built by the Pioneer Fireproof Co., of dense fire-clay: common method of construction, broke at 5,429 pounds of pig-iron.

Arch built by Thomas A. Lee, of porous terra-cotta and with the end-method of construction. Carried 15,145 pounds of pig-iron for two hours without breaking. Afterwards, broken by three blows from a ram weighing 134 pounds and dropped from a height of ten feet.

Arch built by Wight Fireproofing Company, of dense fire-clay: common method of construction, broke at 8,574 pounds of pig-iron.

DROPPING TEST.—Arch built by Pioneer Company, of dense fire-clay: common method of construction. Broke at the first blow from a ram weighing 134 pounds, dropped from a height of six feet.

Arch built by Thomas A. Lee, of porous terra-cotta: end-method of construction. Same ram dropped on it from a height of six feet four times; same ram dropped on it from a height of eight feet seven times. Arch went down at the eleventh blow.

Arch built by the Wight Fireproofing Company, of dense fire-clay: common method of construction, broke at the first blow from the same ram, dropped from a height of six feet.

FIRE AND WATER TEST.—Arch built by Pioneer Company, of dense fire-clay: common method of construction. Three applications of the water destroyed this arch. When the brick furnace was removed from under it, this arch collapsed.

Arch built by Thomas A. Lee, of porous terra-cotta, on the end-method of construction. This arch was given eleven applications of the water, and at the end of twenty-three hours was practically uninjured, as it required eleven blows from the ram used in the dropping-test to break the arch down after the furnace was removed from under it.

Arch built by the Wight Company, of dense fire-clay: common method of construction. This arch was given fourteen applications of the water, and after twenty three hours very little of the arch was left, and it collapsed as soon as the brick furnace was removed from under it.

CONTINUOUS TIRE FEST.—Arch built by Pioneer Company, 9" deep, of dense fire-clay: common method of construction. This arch, after having a continuous fire under it for twenty-four hours, was destroyed, as it collapsed as soon as the brick furnace was removed from under it.

Arch built by Thomas A. Lee, of porous terra-cotta: end-method of construction. This arch, after having a continuous fire under it for twenty-four hours, was practically uninjured, as, after its furnace was removed from under it, it supported a weight of bricks of 12,500 pounds on a space three feet wide in the middle of the arch.

Arch built by Wight Company, of dense fire-clay: common method of construction. This arch, after having fire under it for twenty-four hours, was unable to carry its load of 300 pounds per square foot, and collapsed as soon as the brick setting was removed from under it.

In painting ironwork exposed to wind and rain, take, says the *Mechanical World*, red oxide of iron, ground in oil, and mix it with equal parts of boiled linseed oil and turpentine, add 1 ounce patent dryers to the pound. This is said to be a good paint for the purpose.

OUR ILLUSTRATIONS.

RESIDENCE OF MR. P. LYALL, MONTREAL. MR. JOHN JAMES BROWN, ARCHITECT, MONTREAL.

ST. GEORGE'S CATHEDRAL, KINGSTON, ONT.—MESSRS. POWER & SON, ARCHITECTS.

CLUB HOUSE FOR THE ATHENÆUM CLUB, TORONTO. MESSRS. DENISON & KING, ARCHITECTS.

PROVINCE OF QUEBEC ASSOCIATION OF ARCHITECTS.

At a meeting of Council held on March 16th, there were present: Messrs. J. W. Hopkins, President, in the chair; V. Roy, 2nd Vice-President; A. C. Hutchison; A. F. Dunlop; A. T. Taylor; W. E. Doran, Treasurer; C. Clift, Secretary.

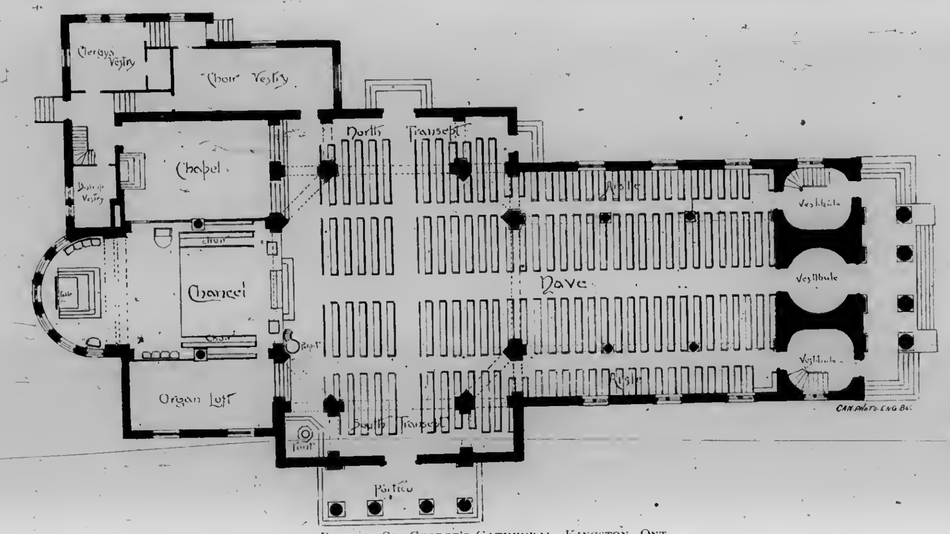
The minutes of last meeting were read and confirmed.

A letter dated Jan. 31st, 1891, from M. Ouelette, was read. The Secretary was instructed to answer questions contained therein as follows:—

1. In a competition for plans of a building, is it right that one of the competitors sign his plan?

Provided there was no conditions to the contrary, it would remain optional with the competitor.

2. In that case, is it right to choose only one judge, when this judge knows well every competitor?



PLAN OF ST. GEORGE'S CATHEDRAL, KINGSTON, ONT.

3. Do you think that a judgment in that case ought to be a final one?

Questions 2 and 3. The Council thought that on these points the judge should be governed by the conditions of the competition.

4. Do you think in a case like this a judge ought to accept this position, or else put aside the plan signed as aforesaid?

In the absence of the conditions of the competition, the Council cannot answer as they would wish, and before answering finally, would like a copy of such conditions.

The Secretary was also instructed to write the Quebec Local Association to the effect that the Council were about to prepare a guide to govern competitions, and that when completed, copies would be sent them.

A letter from J. B. O'Heroux, of Feb. 5th, 1891, was read, and the Secretary instructed to write him, saying it was necessary for him to serve one year in an architect's office, after a course of four years study, but a preliminary examination in his case would not be necessary.

The following members were duly elected: Messrs. E. Colonna, Montreal; J. E. Dore, Montreal; G. Simard, Montreal; J. R. Rhind, Montreal; Chas. Chaussé, Montreal; A. Flockton, Montreal; A. H. Larochelle, Quebec; J. B. Bertrand, Quebec.

Mr. H. Robert Talbot applied to become a member, but the Council decided he did not come under the meaning of the Act, *i. e.*, practising architect, he not having supervised work on his own account previous to the passing of the Act of Incorporation. The Council strongly recommended that he come up for the final examination in July next, being thoroughly satisfied with the term of studentship. This decision was arrived at after Mr. Talbord had been given a hearing. To the question put to him by the Secretary, whether at any time before the 30th of December last he had superintended buildings on his own account, he distinctly answered, "No." The Council at the same time did not question his ability to supervise work, but it was not in their power to discuss the point, as the Act is very plain on the point at issue.

The Committee elected to look into by-laws laid them before the meeting; after some discussion they were further and finally amended and adopted. Copies were ordered to be sent down to Quebec for approval or comment, and then printed with the Act in French and English in phamplet form, to be distributed among the members as soon as possible.

It was decided to hold a general meeting as early as possible to lay before the members the business done by the Council up to present time.

The matter of the Board of Trade competition was brought before the Council by Mr. Taylor, who said the Board would have a meeting on the morrow to arrange for a general meeting of the members to discuss the competition on proposed new building, and he thought at that meeting the Association should lay before the members the reason for not competing. Mr. Taylor was supported by the Council, and was requested with Mr. Dunlop to attend the general meeting of the Board of Trade and explain the objections found in the conditions prepared governing the competition.

PUBLICATIONS.

We are indepted to Messrs. Simpson & Peel, the well-known contractors, of Montreal, for a handsomely printed and illustrated description in book form of the New York Life building in that city.

We have received from Messrs. Merchant & Co., Philadelphia, the well-known importers of roofing plate, a sketch illustrating the greatest engineering achievments of the century, viz., the Forth Bridge, entire length, 8,296 feet, length, 5,349 feet 9 in., approaches, 1,779 feet Queen's Ferry side; Brooklyn Bridge, entire length, 5,989 feet, span, 1,599 feet 6 in., height of towers, 278 feet, roadway, 135 feet; Eiffel Tower, entire height, 984 feet 3 in., to first landing 184 feet, to second landing 371 feet 3 in.; Statue of Liberty, entire height, 301 feet 3 in., pedestal 149 feet 10 in., statue, 151 ft. 6 in.; Washington Bridge, entire length, 2,375 feet, span, 310 feet, height, 151 ft.; Washington Monument, entire height 555 ft. 5⅛ in., Poughkeepsie Bridge, length, 1⅓ miles, double track bridge. The sketch is an artistic reproduction of water colors on "egg-shell" paper.

THE TORONTO ARCHITECTURAL SKETCH CLUB.

OWING to the indisposition of Mr. R. J. Hovenden on Monday, March 23rd, his talk on "Decoration" had to be postponed. A a large number of valuable colored plates lent by him were examined with much interest by the members, and an open discussion on the subject was taken part in by Messrs. Frank Darling, Sam Jones and others, Mr. Darling urging the necessity of architects keeping unbroken the main lines inside a building, for if this is not attended to, it is very difficult to carry out any decorative scheme in a satisfactory manner.

The drawings for an "Entrance to a Park" were then criticized, and many practical suggestions made by Mr. Burke. Mr. T. R. Johnson was awarded first place and Mr. A. H. Gregg second place.

On Monday, 13th inst., Mr. Hovenden gave his postponed talk, and again had a number of colored plates on exhibition. The many valuable hints thrown out during the talk, combined with his clever criticisms on the plates, made a very profitable evening for those present, who showed their appreciation of his efforts in a very hearty way.

TESTING THE VALUE OF PAVING STONES.

THE following plan of testing the comparative value of paving stones is adopted at the Paris Laboratory for Testing Materials, says the *Engineer*. A sample of the rock of regular form is placed upon a horizontal plate, rotating round a vertical axis and pressed against it by suitable contrivances. The wear is then compared with that of a standard material under the same conditions. The coefficient of wear is the proportion between the volumes worn, which can easily be ascertained by weighing the specimens, and determining the volume from this weight, and the specific gravity of the material in question. The rotating surface is cast iron. The two specimens, viz., test piece and standard, are placed at opposite ends of a diameter of the rotating plate, against which they are pressed by equal weights. The standard used is Yvette sandstone, and first-class materials have a coefficient of from 1 to 1·40, while with second-rate materials the coefficient is between 1·40 to 2·40; if the wear is greater than that represented by the latter figure, the material is rejected. An additional test is made by placing specimens of the stones to be tested in a cylinder, which, like those used in clearing scrap iron from rust, is mounted and rotates on an axis which does not coincide with its centre of figure. The amount of detritus produced after the material has been treated for a certain time in this machine is compared with that from a standard rock under the same conditions.

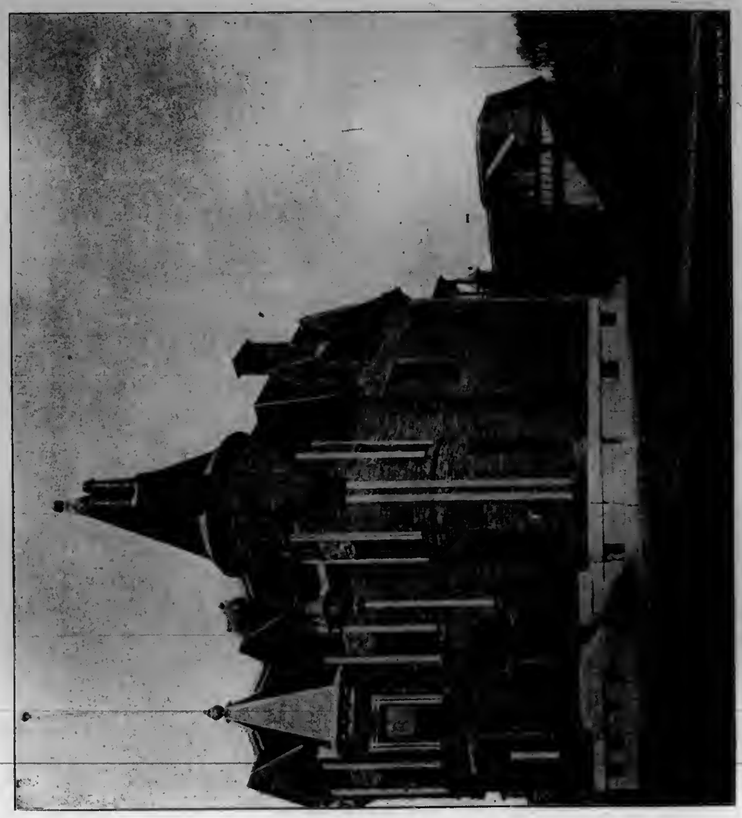
FOUNDATIONS IN WATER.

IN works which are exposed to the action of the sea or the currents of rivers Rennie adopted the plan of bedding the outside joints, for about an inch deep in the face, with Roman cement of the best quality. The interior part of the stones was bedded in mortar, composed of two parts of well burnt stone-lime, one part of ground puzzolano, or calcined pounded iron-stone, and two parts of clean sharp river sand, not too fine. The lime was used hot, for which purpose it was necessary that it should be burnt adjoining the works and mixed at once with its due proportion of sand and puzzolano or iron-stone, previous to being slaked. It was afterwards covered over with sand so as to prevent the access of the air; water was then poured on the heap, and in this state it was left for a day or two until completely slaked; after which it was taken from the heap as wanted. The unslaked particles were separated, and the other ingredients well mixed by being passed through a screen, after which the mixture was made into mortar, with the least possible quantity of water, by means of a pug-mill prepared for the purpose. That part of it required for the day's use being taken away, the remainder was immediately covered up with sand, to prevent the action of the air upon it.

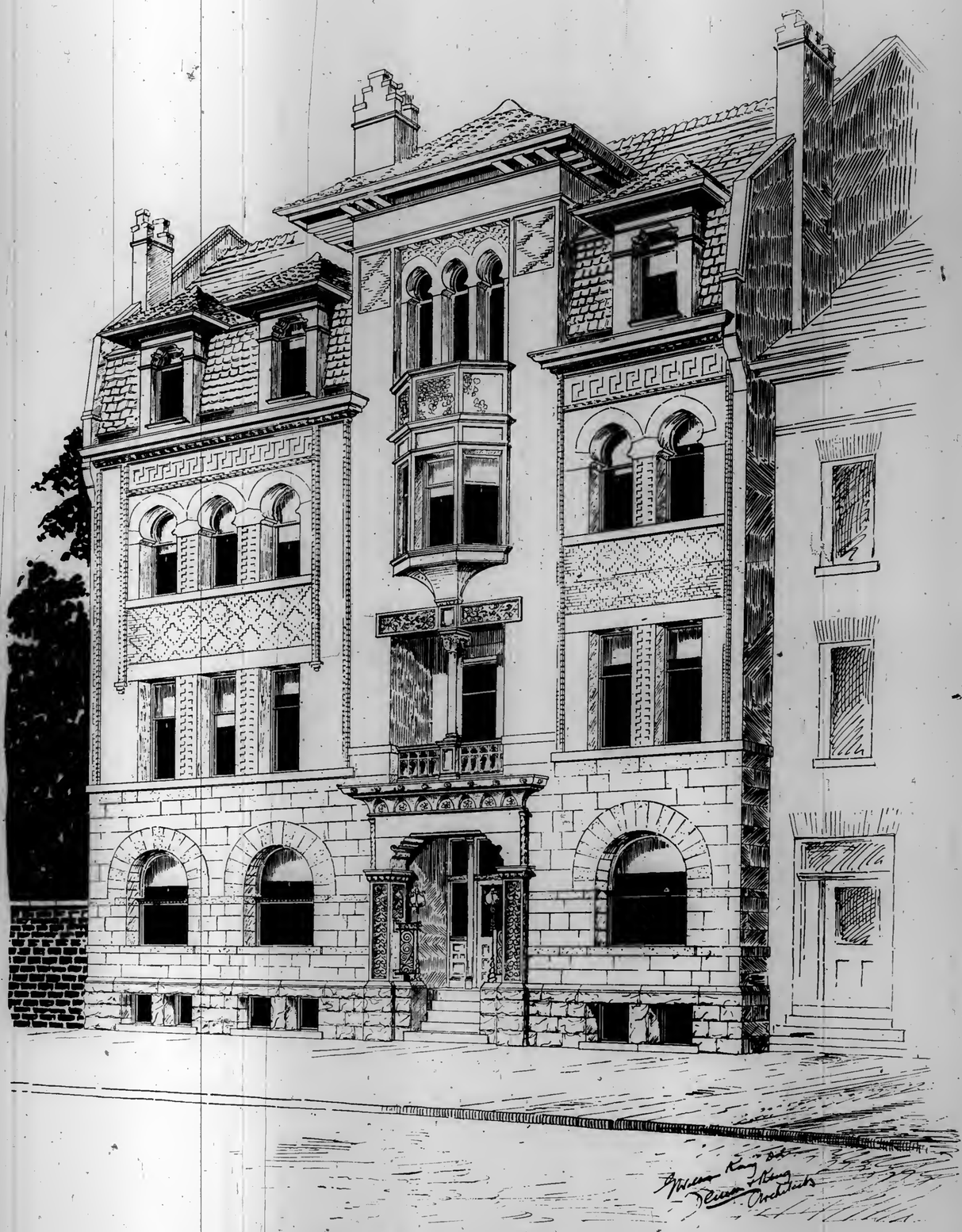
There is no excuse for building underground apartments in the country says the *Sanitary News*. They are never wholesome anywhere, and if families are compelled by stringent reasons to live in the city, where basement dining rooms and underground kitchens are the rule, they should endeavor to have an upper sitting room and live in it as much as possible. The very placing of a house on any ground and living in it under ordinary circumstances causes suctions into its interior of impure soil air, because the air of the house is warmer than the air beneath it, and this induces a rush of cold air to the warmer house atmosphere. The concreted floor will, in a great measure, do away with this difficulty, but not altogether. Ventilation of cellars must, therefore, be attended to, no matter how clean and perfectly built they may be, in town or country. Annual lime whitewashing, an old custom, is decidedly a wholesome precaution, and every cellar should be thus treated, especially in the autumn, as the cellar will be kept closed more in spring and summer.

A large bridge is to be moved on the Grand Trunk Ry., near Kingston, Ont., where the main line is being double tracked. A new double track steel span, 170 feet long over all, 30 feet in width between truss centres, and containing 176,600 lbs. of steel, has been erected alongside its intended location, and is to be rolled into place between trains.

It is sometimes necessary to locate the position of the centre of gravity of the section of an angle or T iron. The following rule may in such cases be found useful in the case of equal-sided angles and T's: Let B = breadth of side and t = thickness of metal. Then distance of centre of gravity from the outer surface of one flange of the angle iron or of the table of the T iron is $\frac{1}{4}$ (B + 32 t). This rule is a very close approximation.—*Engineering.*



RESIDENCE FOR MR. P. LYALL, MONTREAL.
MR. JOHN JAMES BROWN, ARCHITECT



CLUB HOUSE FOR THE ATHENÆUM CLUB, TORONTO.

Messrs. Denison & King, Architects.

CANADIAN ARCHITECT AND BUILDER.

VOL. V.—No. IV. TORONTO AND MONTREAL, CANADA, MAY, 1891. PRICE 20 CENTS $2.00 PER YEAR.

—THE—

CANADIAN ARCHITECT AND BUILDER,

A Monthly Journal of Modern Constructive Methods,

(With a Weekly Intermediate Edition—The CANADIAN CONTRACT RECORD),

PUBLISHED ON THE THIRD SATURDAY IN EACH MONTH IN THE INTEREST OF

ARCHITECTS, CIVIL AND SANITARY ENGINEERS, PLUMBERS, DECORATORS, BUILDERS, CONTRACTORS, AND MANUFACTURERS OF AND DEALERS IN BUILDING MATERIALS AND APPLIANCES.

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ADVERTISEMENTS.

Prices for advertising sent promptly on application. Orders for advertising should reach the office of publication not later than the 12th day of the month, and changes of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The "Canadian Architect and Builder" is the official paper of the Architectural Associations of Ontario and Quebec.

The publisher desires to ensure the regular and prompt delivery of this Journal to every subscriber, and requests that any cause of complaint in this particular be reported at once to the office of publication. Subscribers who may change their address should also give prompt notice of same, and in doing so, should give both the old and new address.

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THE chief of the fire department in Montreal is urging the council of that city to pass an ordinance disallowing the practice of filling hollow walls of buildings with sawdust. Sawdust appears to have been extensively used in this way by Montreal builders as a means of deadening sound. Besides being deprived by more modern materials of any advantage it might once have possessed for this purpose, its combustible nature should alone be sufficient to preclude its use. The chief of the Montreal fire department is doubtless justified in asserting that many large conflagrations in that city have resulted from the employment of this material.

THE adaptability of women to the profession of architecture has been discussed from time to time of late in the professional journals. Probably as a result of this discussion prizes of $1,000, $500 and $250 respectively, were recently offered for the three best designs submitted for a Woman's Building for the World's Fair, the competition being restricted to female designers. As a result of this experiment a number of creditable designs have been received. The successful competitors in order of merit are: Miss Sophia G. Hayden, Boston, a graduate of the Massachusetts School of Technology, Miss Lois L. Howe, also of Boston, and Miss Laura Hayes, of Chicago. In the field of domestic architecture woman will in future be likely to find wide and profitable scope for her abilties.

WE print elsewhere a communication from Mr. Victor Roy, of Montreal, one of the judges in the late Quebec City Hall competition. We would be sorry to think that our comments in our March issue should be construed as throwing any doubt on the competence of the judges in this instance. We were endeavoring to impress upon Canadian architects the folly of entering competitions when proper conditions were lacking. The words "and competent judges appointed" were not intended as applicable to this specific case but to competitions in general. At the same time we hold it to be the duty of self-respecting architects who desire to see all competitions placed upon a fair basis, to refuse to act as referees unless the code be drawn up in accordance with the best practice of the day. The scrupulous observance of this point would rapidly educate the public, perhaps as quickly as the refusal of architects to enter competitions without a proper code and satisfactory judges.

THE Public School Board of Kingston having decided to erect a new building, and being desirous that in it should be exhibited the most approved principles of design and equipment, appointed a committee of its members to visit the schools in Toronto, Hamilton, and elsewhere in quest of information. The committee on their return from a pleasant outing, announced that they were in a position to furnish the architect with such information as would "enable him to put up the building on the most modern principles." The question suggests itself, why was not the architect commissioned to obtain the necessary information? His knowledge of building would surely better qualify him to place a proper value upon what he should observe than a committee of persons desitute of such knowledge. Apart from this important fact is the consideration that information obtained at second-hand is less distinct and more difficult of application than when personally acquired. From an economical standpoint the interests of the taxpayer, which are professedly of paramount importance to the civic representative, would have been better

served by sending the architect instead of the committee as the deputation. To employ an architect and then to appoint a committee to instruct him in the duties of his profession seems to be a trifle inconsistent.

WE desire to draw the attention of Canadian quarry owners to the announcement addressed to them by the Ontario Association of Architects, which appears in our advertisement pages. We would also request builders doing business with quarrymen, to bring the advertisement to their notice. We have in Canada sandstones and granites of first-class quality, and such a series of tests as the Ontario Association of Architects propose to make could result in giving widespread prominence to the fact, and afford to quarry owners such a valuable advertisement as they could obtain in no other way. The publication of tables resulting from these experiments would be likely to open up markets beyond the boundaries of the Dominion. Such tables would be of great advantage to architects and engineers, enabling them to obtain at the School of Practical Science full information with regard to any stones in use in the Province. The testing apparatus just erected at the School of Science, proposed to be made use of for the purpose of these tests, is the most perfect of its kind. The committee of the Association having the matter in charge is composed of men eminently qualified to perform the duty in a thoroughly impartial and satisfactory manner. The Council of the Association is assuming a considerable amount of expense in connection with the matter, and the owners of quarries will be consulting their own interests by giving the undertaking their hearty co-operation.

IN addition to the general regulations proposed by the joint Committee on Building Ordinances, noticed in our issue for April, the following specific regulations were suggested as of the highest importance :

(a) "In all buildings of every kind, the space between the stringers of wooden stairs, if plastered or boarded underneath, should be stopped by filling with incombustible material at three places at least in every flight of stairs.

(b) All hearths in buildings with wooden floor beams should be supported by trimmer arches of brick or stone.

(c) In every building, the space between all studding and furrings, both of inside partitions and outside walls, in the thickness of the floor, and for 6 inches above, should be filled with incombustible material. Also that the continuous space between the joists of every floor, ceiling and roof shall be effectually cut off at every point where the joists are supported.

(d) Al lbrick party walls and brick outside walls adjoining neighboring property, should be carried up above the adjoining building.

(e) At least 4 inches of brick should intervene between the ends of wooden floor beams entering a brick party wall from opposite sides.

(f) The walls of brick buildings should be tied at intervals by the floor beams, which, if of wood, should be so anchored to the walls that, in case they are burned off, they will not, in falling, overthrow the walls."

The careful observance of these points in the construction of the ordinary type of building would result in a great reduction of fire loss, and if municipalities cannot be made to move in the matter of more advanced regulations for safe building, we imagine it would be in the direct interests of the insurance companies to draw up such a code, upon the observance of which they would agree to so materially reduce the rate of premium that it would become an object with builders to conform to it.

WE must confess to considerable chagrin at the result, or rather non-result, of our proposed competition for bills of quantities. The time given was ample and the prize as great as the average draughtsman would earn as salary in a fortnight, and yet no one has, apparently, thought it worth an effort. Perhaps our young architects and the draughtsmen and students have already reached a high point of excellence and do not need any exercise. But even if they have, it would be an act of charity to help some of our builders. We saw a list of tenders this week where the amounts varied from 25 to 100 per cent., indicating that the estimates were simply guesses. Two competitions instituted by the Ontario Association of Architects have likewise been barren of results. The first, a competition for the Association seal, did not produce a single response. The second, a competition for mission chapels, under the auspices of the Presbyterian Church, resulted in the sending in of designs by two competitors. The committee having the matter in charge were not satisfied with the designs, deeming them unsuitable. Both these projects will be again advertised for competition. With regard to the seal, it should be a competition entered into with enthusiasm. This seal, if of meritorious design, would probably be permanently retained and would become historical. It should be a case of earnest effort on the part of our younger architects or senior students, to win this coveted distinction. The prize winner in the mission church competition may look forward to considerable work arising out of it. Here, surely is an opportunity for young men desirous of gaining a connection and making a start in life.

THE engineers appointed to examine the Y.M.C.A. building at Montreal, Messrs. Peterson and Keefer, have reported regarding the second question submitted to them, which was "Whether there are any defects in the design or construction of any of the parts of the building which require to be remedied in order to make it absolutely safe and strong." They expressed it as their opinion, from such examination of the structure as they were able to make, that the work generally was well done, citing the fact that in the tearing out of the beams caused by the late accident, the damage to the walls was entirely local, being confined to holes in the walls where the anchors had been pulled through. The composition of the mortar was, according to the inspector, one part Portland cement, two parts common lime and six parts sand. This, the experts report, would not be considered by engineers a good mortar for foundation work, although usual in the practice of Montreal architects. Five piers around the swimming bath, in addition to the one which failed, and which also bear concentrated loads, were reported to show signs of weakness, the cap stones and corbels being too thin, less than thickness specified, not parallel in the dressing, and consequently imperfectly bedded. In two cases the cap stones were much smaller than the piers ; these piers were built in lime mortar and the heart was much slower in setting than the outside, the concentrated load from the columns thus coming upon the weakest part. The experts recommended the rebuilding of about three feet of these piers in cement mortar, and the substitution of larger and thicker cap stones. The iron beams were reported to be amply strong and the iron work generally well designed, although some of the details of execution were defective, such as beams with too little bearing, and in one case, lack of filling-pieces where it was necessary to have an equal bearing on a pair of girders. The report concludes by stating that when the foregoing defects have been remedied, the building will be amply strong.

INFORMATION WANTED.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—I want to remedy a chimney from leaking soot. Please state general causes and remedy. Is a house veneered with brick safe in case of fire? Are they warm? Tell me what you know of them. What is the best way to treat a hardwood kitchen floor? Will coal oil stop dry rot in timber? I would very much like to see the correct estimate and all other estimates you will receive on the $20 competition.

B. F. KEIZAR,
Stanstead, Que.

[The first question of our correspondent was fully covered in answer to a similar question in our February number last year, but lest he has not that number we repeat it : "The discoloration on outside of the flue is caused by the condensation of the wood smoke. The wall of flue being probably only 4½" thick, absorbs the dampness from the exterior atmosphere or from a driving rain, is always cold and damp in weather cold enough to need artificial heat. The smoke striking this cold brickwork, is condensed, forming the well-known inky fluid, which is often seen dripping from the stove pipes when of great length. The burning of green wood would probably aggravate the trouble. A flue on an outside wall should have at least 7" thickness on exposed side. An absolute remedy would be to build into the flue 9" glazed drain pipes, if special flue pipes are not obtainable. The brickwork could be cut out from the exterior, and pipes inserted if the chimney-breast inside is of sufficient size to allow of it."

2nd. A veneer house is no safer from an internal fire than a frame one ; it would be as safe externally as any ordinary brick building. A brick cased house is warmer than a frame house only when erected on a solid stone or brick foundation and the walls thoroughly lined with felt behind the brick casing. The cost if carried out in this manner (in localities where brick is easily obtainable) will be nearly as great as if the wall was solid 9" brick. This, if roughly plastered on the brick before strapping, makes a fairly warm and comfortable house.

3rd. Two coats of raw linseed oil well rubbed in.

4th. We have had no experience in regard to the treatment of dry rot with coal oil—ventilation is the prime requisite.

5th. We have received no estimates or bills of quantities in response to our invitation.—EDITOR C. A. & B.]

OUR ILLUSTRATIONS.

ST. PAUL'S CHURCH, WINGHAM, ONT.—MESSRS. STRICKLAND & SYMONS, ARCHITECTS, TORONTO.

MONTREAL BOARD OF TRADE BUILDING COMPETITION.—DESIGN SUBMITTED BY J. RAWSON GARDINER, MONTREAL.

TORONTO ARCHITECTURAL SKETCH CLUB COMPETITION FOR "AN ENTRANCE TO A PARK—DESIGN AWARDED FIRST POSITION, BY "TURNSTILE," (MR. T. A. JOHNSTON).

STONE MANTEL IN RESIDENCE OF MR. P. LYALL, MONTREAL. JOHN JAMES BROWNE, ARCHITECT.—EXECUTED BY MR. H. BEAUMONT.

CODE FOR THE REGULATION OF TENDERING.

THE Buffalo Builders' Association Exchange have issued a code for the regulation of tendering for work in architects' offices, and we note that it is reported to have the approval of the Buffalo Chapter of the American Institute of Architects. The following is the code :

Whereas, the manner of receiving bids on work prepared by architects and others has varied, and to make a uniform and fair method of the practice, now, therefore, be it resolved, that on and after this date we, the members of the Builders' Association Exchange, decline to submit bids for work unless the following code is used and adopted :

RELATING TO PROPOSALS AND AWARDS.

Just and proper methods which should prevail when estimates are solicited from *contractors* in the building trades.

PLANS.

1. Drawings prepared for final or competitive estimates must be sufficient in number and character to represent the proposed work clearly, and shall be to a scale of not less than one-eighth of an inch to the foot (except block plans), and be rendered in ink, or some permanent process, colored, figured, and otherwise marked in such a manner as to clearly show all kinds of material to be used, thickness of walls, etc., in the construction.

DETAILS.

2. Proper details must be furnished for work that is not otherwise sufficiently shown.

SPECIFICATIONS.

3. Specifications must be in ink. They shall be definite, where the work is not clearly shown by drawings. Every distinctive class of work to be included in the contract must be mentioned and placed under its appropriate heading.

RESTRICTIONS AS TO SUB-CONTRACTORS.

4. Contractors must be notified at time of estimate, if they are to be restricted in the employment of sub-contractors.

NOTICE FOR OPENING BIDS.

5. Before opening bids, the bidders shall be notified of the time when and the place where the bids will be opened, and in the presence of the attending bidders.

PERCENTAGE ON SUB-CONTRACTS.

6. Contractors shall be allowed a compensation of 5 per cent. on all sub-contracts, which at the time of estimating are "reserved," or not called for in their portion of the specification, but which may be assumed by them by request of the owner or architect, after the bids have been received and opened.

Contractors shall not be be denied contracts upon the work covered in their original estimate, on account of declining to assume the aforesaid reserved sub-estimates.

SUB-CONTRACTS.

7. A contractor who may refuse to become a sub-contractor shall not thereby forfeit his right to the award.

AWARD.

8. When work is to be let for which estimates have been solicited, unless previous notification to the contrary has been given, the lowest invited bidder shall be entitled to the contract, and all minor charges shall be agreed upon with him, provided his prices are equitable. Should the prices for changes made by the lowest bidder not be deemed equitable, it shall be settled by arbitrators, one of whom shall be appointed by the owner and the other by the bidder, they to appoint a third if necessary, and the majority decision shall be final.

If radical changes are made, the whole competition may be re-opened.

Bidders must not be allowed to amend their estimates after the bids have been opened and before the award.

9. Bids shall be binding upon the bidders for not more than sixty days.

10. No payments on contracts shall be less than 90 per cent. of the value of work done ; the remaining 10 per cent. to be paid within thirty days after the completion of the contract. Sureties will be furnished by the contractors, if so required by the owner ; and in such case the payments shall be 100 per cent. of the value of work done.

11. The uniform contract adopted by the American Institute of Architects, the Western Association of Architects and the National Association of Builders is recommended.

COMPENSATION FOR ESTIMATING.

12. Should all solicited bids be rejected, or the owner refuse to contract with the lowest invited bidder within sixty days from the date on which the bids are submitted, or refuse to abide by a decision of a majority of the arbitrators, then the said owner shall compensate the lowest invited bidder as follows :

For all cases where the bid does not exceed $1,000. $10.

For all cases where the bid exceeds $1,000, and does not exceed $5,000, one-half of 1 per cent. upon the excess over $1,000, and $10 added.

For all cases where the bid exceeds $5,000, and does not exceed $20,000, three-eighths of 1 per cent. on the excess over $5,000, and $30 added.

For all cases where the bid exceeds $20,000, and does not exceed $40,000, one-fourth of 1 per cent. on the excess over $20,000, and $86.25 added.

For all cases where the bid exceeds $40,000, one-eighth of 1 per cent. on the excess over $40,000, and $136.25 added.

FAILURE TO CONTRACT.

13. Should the lowest invited bidder, at any time within sixty days from the date on which bids are submitted, refuse to contract at his bid, or to abide by the decision of a majority of the arbitrators, the said bidder shall pay the owner liquidated damages (not a penalty) in the same amounts and ratio stated above for "compensation for estimating."

Clauses 1 to 4 are such as should be and are, as a rule, carefully observed in the office of any just and self-respecting architect.

The observance of clause 5 would in most instances be surrounded with difficulties. We have known of instances where upwards of one hundred tenders were received for a single job in Toronto, where separate tenders are usually taken for each trade. In such a case the architect would be compelled to hire a hall or have the meeting on the sidewalk in front of his office. The inference might be drawn from the regulation that Buffalo contractors lacked confidence in the architects, and that they and their clients needed careful watching. The proposition seems to our mind about as possible as it would be were a possé of wholesale merchants to accompany a retail buyer in his visits of enquiry and pricing at their various establishments. If a contractor has not sufficient confidence in an architect to trust him with a tender, he had better not run the risk of working for him but leave him severely alone. There are times also in the opening and consideration of tenders when it would be extremely awkward and inconvenient to have any person but the client present.

Clause 10 would only be practicable in the case of thoroughly reputable contractors of means. The 100 per cent. proposition would necessitate a most carefully detailed estimate at the granting of each certificate, and in the case of extras, an adjustment at each payment, an arrangement which would only be possible in large work where certificates are given at longer intervals than is the custom with ordinary work which forms the bulk of general office practice.

Clauses 12 and 13 are suitable and fair, and would tend to make, 1st, the architect more careful in his preliminary estimate, 2nd, the client sure of his own mind in regard to his project, and 3rd, the contractor more careful in making up his tender.

The sins cannot all be laid at the door of the client in this matter. In the experience of many of the profession in Toronto there is a woeful lack of integrity amongst some builders in this matter. A careless tender is put in ; when it is accepted, the tenderer immediately begins to enquire of his competitors the amount of their figures, and if he is considerably below them he "discerns an error in his calculations" and cooly withdraws his tender. The architect is often glad to be rid of him, knowing it to be impossible to do good work at the figure ; at the same time, this very leniency intensifies and spreads the evil.

QUEBEC CITY HALL COMPETITION.

MONTREAL, April 16th, 1891.

Editor CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—My attention was called by Mr. Staveley, architect, to an article on the competition for the City Hall at Quebec, published in the CANADIAN ARCHITECT AND BUILDER, March number, page 29.

Mr. Staveley, Mr. Baillairge, of Quebec, and myself, were the judges to decide on the merits of the plans submitted, in which we claim to have done justice to their merits.

By your last paragraph you seem to put a doubt as to our competence. I have every reason to believe that it has been published unseen by you, therefore I and my collegues will be very much pleased if you would correct that article in your next number.

I will furthermore state that if the architects who received no premiums consented to hand over their plans for the sum of three hundred dollars, the judges had nothing to do with the matter.

The following is a table showing the way the judges proceeded to award the prizes offered for designs of the proposed new city hall :

	Cost.	Elevation.	Fire Brigade.	Police.	1st Floor.	2nd Floor.	3rd Floor.	Constructin.	Total.	Cubic feet.	Price per foot.	Total cost.	Class.
Stadacona	5	2	4	3	3	2	3	2	24	1.796.760'	12c	$215.611	1
Escutcheon	4	3	1	4	1	2	3	3	21	1.916.800'	12c	$230.016	2
Fides	1	0	3	2	4	2	3	1	16	2.736.000'	12c	$328.320	3
Olbany	0	1	0	0	0	0	0	1	2	2.805.440'	14c	$392.761	4
Fideas	0	0	2	1	1	4	0	2	10	3.322.880'	13c	$431.974	5
Olna	0	4	0	0	1	0	1	1	7	3.038.560'	15c	$458.784	6

First prize to "Stadacona"; second prize to "Escutcheon"; third prize to "Fides."

The judges were : Mr. Tache and Mr. H. Staveley, of Quebec ; Victor Roy, of Montreal.

Hoping that the above will suffice to prove our competence,

Yours very truly,

VICTOR ROY.

The Chemical, Mining and Manufacturing Company of Ontario has been formed with a capital of $100,000, with headquarters at Owen Sound, Ont., for the purpose of manufacturing Portland cement from the deposits of clay existing in that locality. In addition to Owen Sound parties the following Toronto gentlemen are interested in the company : Messrs. Thos. Bryce, W. H. Pearson, Ald. Lucas, Wm. Hill, S. Wood, Geo. J. Foy, Powell & Parkinson. Mr. R. P. Butchardt, who is the manager of the company, in England for the purpose of purchasing the necessary plant.

PROVINCE OF QUEBEC ASSOCIATION OF ARCHITECTS.

AT a general meeting held on May 1st to receive progress report from the Council, and other business, there were present: Mr. J. W. Hopkins, President, in the chair; Mr. V. Roy, 2nd Vice-President, and Messrs. A. C. Hutchinson, A. Raza, A. T. Taylor, A. F. Dunlop, members of Council; W. E. Doran, Treasurer; Messrs. G. E. Tanguay, J. H. Bowe, J. R. Rhind, W. McLea Walbank, Theo. Daoust, A. Gendron, J. J. Browne, W. H. Hodson, J. A. P. Bulman, J. Venne, J. Wright, Geo. W. Wood, J. H. Bernard, J. Perrault, C. Clift, Secretary.

The Secretary read the following report:

This meeting has been called that your Council may report on the work done by them since the formation of the Association last October. Since our first meeting of Oct. 10th the Council have held thirteen meetings. As you are aware, it was decided at the meeting of Oct. 10th to apply for an Act of Incorporation. On the 14th we were informed that all applications for Acts of Incorporation had to be in before the 15th of October if required to be dealt with that session, so application was made at once through Mr. Prefontaine. The preparation of the Act was left to a committee of four, and they reported to the Council on Nov. 14th, at which meeting, after being slightly amended, it was decided to give it at once to Mr. Prefontaine, he to have it printed and laid before the House of Assembly.

On the 5th of December a telegram was received from Quebec saying "Bill nearly killed, arrange for deputation." That same day the Secretary saw Mr. Prefontaine, and he advised the Council to send down a strong deputation. Eight members of the Council and four members of the Association left Montreal on Dec. 9th for Quebec, and on arriving next morning went to the House of Parliament with a large number of our Quebec confreres.

On the 10th the Bill was dealt with, and after some considerable opposition, was passed. The Council and members having seen it through so far, the Montreal contingent left Quebec that same day. The Council had been advised to have Mr. Delisle, a lawyer of Quebec, to represent the Quebec contingent. He attended with Mr. Prefontaine and Mr. Langelier with the deputation before the Private Bills Committee.

On Dec. 18th the Secretary received a telegram asking some of the Council to go down at once. That evening six members and the Secretary went down to Quebec. On arriving they went with our Quebec confreres to the House and found the Bill would not come before the Legislative Council Committee before the early part of the following week. But they found out where the opposition to the Bill lay, and it was deemed advisable to have Mr. Resther and the Secretary remain in Quebec, they with the Quebec members to use every endeavor to have the Bill pushed through, as the session was drawing to a close. The Bill went through the Committee of the Legislative Council on the 22nd, and next day was read in the Lower House and finally sanctioned on Dec. 30th, 1890.

The Bill as sanctioned has been printed in English and French, and a copy sent to each member of the Association.

On Oct. 10th, the By-laws and constitution of the Association were adopted, then partly printed, but were stayed until the Bill had passed, as it might affect them. After the passing of the Bill your Council held a meeting on Jan. 15th to reorganize under the Act. The Council organized, electing the same officers as were elected by the members at the meeting of the Association last Oct. 10th.

The by-laws were then taken in hand and left to a committee of three to look over, they to lay them before the Council at an early date. This committee reported on March 16th. After being further amended, the by-laws were adopted and sent down to Quebec for approval. On their return they were printed in French and English and a copy sent to each member of the Association.

The Council took up the matter of the competition for the new Board of Trade building. That body (the building committee of the Board of Trade) not acceding to the reasonable requests made by your Council, members were requested to refrain from entering the competition. The Ontario Association also had some correspondence with the building committee of the Board of Trade and took similar action to our own.

A Board of Examiners has been elected to prepare papers for the forthcoming examinations should any wish to present themselves. The Board consists of Messrs. Berlinguet and Baillairge, of Quebec, and Messrs. Roy, Thomas and Taylor, of Montreal.

At our first annual meeting, 35 enrolled themselves as members of the Association. Since then 14 have joined, making a total of 49. One of our members, M. Laurent, we are sorry to say, died shortly after joining.

We shall as soon as possible get rooms for the Association, one of which will be given up to the students.

The works which the Council are prepared to go on with immediately are: The engaging and furnishing of rooms, forming of a library, framing of a tariff, preparation of a form to guide competitions, papers or classes or other means of instruction for the students.

The Board of Examiners undertake the preparation of papers for examinations. All these and more we hope to accomplish before our next annual meeting in October.

It was moved by Mr. J. Wright, seconded by Mr. Bulman, that the report be received and adopted. Carried.

It was moved by Mr. Browne, seconded by Mr. Walbank, "That each member be assessed the sum of $5.00, so that the Council may meet expenses incurred by procuring the Act of Incorporation." Carried.

It was moved by Mr. Browne, seconded by Mr. Bulman, "That a vote of thanks be given the President and officers and Council of the Association for having the Bill passed through the House, and for the time and trouble they have given for the benefit of this Association." Carried.

There being no further business the meeting closed.

At a Council meeting held on May 4th to receive applications for membership, &c., there were present: Mr. J. W. Hopkins, President, in the chair; Mr. V. Roy, 2nd Vice-President; and Messrs. A. C. Hutchinson, A. Raza, A. F. Duplop, M. Perrault, A. T. Taylor, W. E. Doran, Treasurer; C. Clift, Secretary.

A letter was read from E. Colonna, in which he asked for the withdrawal of his application for membership. It was accepted.

A letter from J. A. M. Beaudry was read, and the Council decided to accept his application for membership, leaving the establishing of date of practice to a committee that will be appointed for the purpose.

A letter from Mr. Venet was read in which he asked for information re examination. The Secretary was instructed to send him a copy of the by-laws.

Applications from the following were received and passed for membership: John Esinhardt, 379 St. Hubert street, James Smith, 557 St. Lawrence street, and G. A. Monette, as a student. Applications for membership were received from J. A. Thibaudear and Messrs. Joseph and H. M. Perrault.

It was unanimously decided to hold a meeting of the Council every fortnight.

PERSONAL.

Mr. John Herbert, the builder of several well-known public buildings in the city of Toronto, died in that city on the 11th inst.

The recent death of Mr. T. J. Hibbard, of the firm of H. & T. Hibbard, stone cutters, Toronto, caused widespread regret among members of the building trades throughout the city, by whom he was held in universal respect.

By the resignation of Mr. Tracy, City Engineer, the city of London has lost an official whose place it will be difficult to fill with equal ability. Mr. Tracy has accepted the position of City Engineer of Vancouver, B. C., and will doubtless leave the impress of his skill upon the future development of that rapidly growing and already important city.

It is a somewhat peculiar circumstance that within a period of two years the principal contractors in the erection of the two most important buildings under construction in Ontario should have been forced at the call of death to leave to other hands the completion of their undertakings. Last year the community was startled by the sudden death of Mr. Lionel Yorke, the contractor for the new Legislative building. During the last month Mr. Elliott, the contractor engaged in the erection of the new Toronto municipal buildings, succumbed to an attack of la grippe. Mr. Elliott was for thirty years a resident of Brantford, Ont., during which period he filled with much ability and integrity several positions of public trust and responsibility. He removed to Toronto last year, to be the better able to give his personal supervision to the great undertaking which he had assumed. Mr. Elliott was 69 years of age at the time of his death. The fulfilment of his contract has been assumed by his sureties.

The Toronto Master Carpenters' Association has elected the following officers: John J. Withrow, President; Richard Dinnis, Vice-President; J. C. Scott, Treasurer; Wm. Simpson, Secretary; Committee, Messrs. W. Simmons, Geo. Moir, Douglas Scott, Wm. Power and Wm. Forbes.

BUILDING MATERIALS.*

THE consideration of the subject of building materials for any structure naturally suggests three departments of investigation, viz.: 1st, The question of structural suitability; 2nd, The subject of artistic suitability; and 3rd, The matter of expense. All of these must necessarily receive some attention, and each in its relative importance.

Experience and observation seem to declare that in far too many cases their order of importance is reversed, and the financial aspect of the subject receives more than its due share of consideration. Instances are by far too common when the ingenuity and thought of an architect are unduly taxed to accomplish with a cheap and inferior material, an effect which should only be sought by the use of something more expensive. The financial interest of a client is often so unduly pressed that an architect is led to use a material which, were he untrammelled in regard to cost, would not find a place in his building. It will be found, however, that a client's best interests are frequently served by the use of a more expensive and durable material, even though at the outset his limited views may cause him to protest against such an expense. Certainly there can be no question that an architect's reputation depends largely upon the quality of materials used in his buildings, as well as upon the skill with which they are disposed. So it cannot be amiss to emphasize the need of placing the most important aspect of the question first, viz., structural suitability, then artistic effect, and then cost. In the first of these matters the architect's decision should be so intelligent and definite that no interference will be attempted by a client. Of course there are always half informed men of positive opinions, who, because they have to pay the bills, insist upon their views being carried out. But when met by a well-informed architect, whose views are positive because he knows whereof he speaks, such clients are usually found amenable to—what in the end is for their best interests. Certainly the opinion of an architect who has studied the structural suitability of building materials is entitled to be received as final; and no client should be allowed to overrule the best judgment of his professional adviser, when all the facts have been considered. Concerning the subject of artistic suitability, a somewhat similar attitude should be assumed by the architect. Courtesy, however, is due to the pronounced tastes of the man who is not only to pay for the building, but also perhaps live in contemplation of it day by day. Even then, however, it is a question whether the architect should not insist upon carrying out his view and provide a structure which may perhaps have an educative influence upon the uncultured taste of his client.

Whatever may have been our experience in the past or resolutions for the future in regard to these matters, our position must be greatly strengthened by an intelligent and comprehensive knowledge of both subjects. This, as you are well aware, can only be attained by constant study and observation. It is to briefly direct your attention to one of these branches that I now present this paper. The field is too large to even cursorily touch upon its various departments, so I must content myself with a few generalities upon some of the more common building materials.

First in order are the natural products. Stone occupies a front rank in natural building materials, because of its durability and other excellent qualities. Building stones are subject to two methods of classification, viz., according to their chemical composition, or their mechanical structure. The consideration of both of these is necessary to determine the suitability of a building stone.

Mechanically considered, stones are either simple or compound. Those composed of the same substance throughout are simple, as for instance pure limestone. Compound stones are an aggregation of simple minerals, which in their final formation have been either cemented or simply aggregated. In cemented stones the particles are cemented together by another substance, and their strength and durability largely depend upon the nature of this cementing substance. If it be pure silicious cement, the stone is very durable, provided the matter so cemented is itself durable. If the cement be aluminous, the cohesion will be much less; more especially when the alumina is mixed with iron, in which case the stone is subject to chemical disintegration. If the cementing substance be calcareous, the action of heat, rain or frost is liable to produce either chemical or mechanical disintegration. In aggregated stones the simple minerals are immediately connected together without any other cementing materials. These stones may generally be classed as granular, slaty or porphyritic. When the stones of simple material or mineral are of nearly the same size, length and breadth and thickness, the stone is called granular, such as granite. When the constituent elements are thin and flat, the stone is called slaty. Where one of the constituent elements forms a basis in which the other parts are imbedded, the stone is called porphyritic.

The principal chemical elements of most building stones are silex, alumina, lime and magnesia. The preponderance of any of the first three leads to the classification of the stone under the head of either silicious, aluminous or calcareous. As, however, aluminous stones nearly always contain a mixture of silex, they are more generally termed argillaceous. Silex or the earth of flints being nearly insoluble, forms a very important element in producing a strong, compact and very enduring stone. The two great classes of silicieous stones are granites and sandstones—the former being aggregated and the latter cemented.

Granite and gneiss are composed of quartz, feldspar and mica. The best stone is that in which the particles are fine and uniformly distributed. If the quartz predominates, the stone will be hard and brittle; if the feldspar is in large quantity, chemical decomposition may take place; if the mica is in excess, the stone will be soft and subject to mechanical disintegration.

Sienite, which is classed under the general term of granite, is composed principally of hornblend and feldspar. Sandstones are composed of small particles of quartz united by a cement, which is either silicieous, argillaceous or calcareous in nature. The best sandstones are usually those where the cementing substance is silicieous. The worst are those where it is argillaceous. The grains of sandstones being comparatively indestructible, the durability of the stone depends upon the cementing material. Chemical action which might affect the calcareous cementing material, or both chemical and mechanical action affecting the argillaceous or aluminous cementing material, must always be taken into consideration when dealing with the suitability of sandstone. From the mode of their formation sandstones are frequently laminated, more especially when the thin plates of mica have been deposited in planes parallel with its bed. Hence the necessity for placing sandstones on their natural bed; otherwise, if the planes of lamination are in a vertical position, the decomposition of the laminæ will cause the stones to fall off in flakes.

When the mechanical structure of the stones is good, silicieous stones are the best possible material for foundations, piers, bedding plates or any position requiring great strength, hardness and durability. Pronouncedly silicieous stones, however, have this great drawback, that they are very hard to work with the mason's tools.

Argillaceous stones, like common clay, are a mixture of alumina or pure clay and silex. In most instances there is a further mixture of metallic oxides and other earths. Nearly all the stones known to builders as slate belong to this class. The most deleterious substances found in these stones are iron and its sulphurets. Iron in the form of pyrites or in a state of oxide is frequently found in slate. When exposed to moisture, the pyrites become decomposed, and the iron still further oxygenized, the surface of the slate peels off or falls into powder. In proportion to the amount of silex held in chemical combination, will be the strength and hardness and enduring qualities of argillaceous stones. The action of water and vegetable growth upon aluminous stones is very considerable, hence those that contain the most silex and absorb the least water are generally the most serviceable.

Calcareous, or limestones, cover a large range of our available building stones, from pure chalk up to marble. They are composed principally of carbonate of lime combined with metallic oxides. They may be divided into three classes, viz., the simple, the oolite, and the magnesian. The simple limestones are very durable, but they are difficult to work owing to their tendency to splinter. The stone in which the structure is the most crystaline is the best for cutting.

The oolite limestones are composed of oviform bodies cemented by calcareous matter. They are very various in texture and durability, according to whether the oviform bodies and the cement are coherent or not. The limestones which are usually termed shelly, from their being formed of broken or perfect fossil shells cemented by calcareous matter, suffer decomposition in an unequal manner in consequence of the shells offering the greatest amount of resistance to the decomposing effects of the atmosphere.

The magnesian limestones constitute a very valuable class of building material. The addition of carbonate of magnesia gives them a more or less glossy lustre. It is sometimes difficult to distinguish between fine grained sandstone and crystaline limestone. The application of sulphuric acid to the surface will produce effervescence on the limestone, but will not affect the sandstone.

Carbonate of lime being the predominant chemical element in all limestones, the action of water, acids and heat require to be carefully considered. Pure lime, as you know, is produced by the action of heat freeing the carbonic acid gas. The action of fire upon limestone buildings is well known, hence the care that should be observed in keeping such material away from fireplaces, flues or other positions exposed to heat.

Many grey limestones when exposed for a few years become almost white; in this case the chemical change is going on slowly, but the ultimate decomposition of the limestone is none the less sure. The action of water in conjunction with the atmospheric chemical influence, causes a disruption of the exposed particles on the face of the stone. Thus buildings will be found to suffer most decomposition on the surfaces exposed to the rains or driving storms.

It may be well to repeat a few general deductions: 1st, Apart from the questions of cost, color or artistic effect, silicieous stones are the best for general building purposes. They are usually the strongest and also the least affected by the natural elements, care being observed to avoid in one direction, very hard or brittle stone; and on the other hand, sandstones which are cemented by inferior substances. 2nd, For purposes of footings, lintels, templates or other positions requiring great transverse strength, the best qualities of argillaceous stones are very valuable—care being taken to avoid stones containing iron or other convertible materials. 3rd, Simple crystaline limestones and those containing carbonate of magnesia form very useful buildings—care being exercised to not expose them unduly to the action of water, frost, smoke or heat. Two general principles applicable to all stones are: 1st, That the greater their specific gravity, usually, the greater their crushing strength; 2nd, The less water they absorb, the more they are to be trusted.

I must conclude these remarks upon building stones by the following quotations from the report of the Commission appointed to investigate into the causes of decay in the stone of the English Houses of Parliament:

"Regarded from a purely chemical point of view the difference in the resisting power to corrosive agents of different building stones, would appear at first sight to depend entirely upon their *chemical* composition; but even a moderate acquaintance with the properties of the components of such building stones demonstrates that there are other conditions at least equally instrumental in determining the degree of permanence of different stones. It is a well established fact that the *same* chemical substance exhibits in different *conditions* a great variation in its behaviour with chemical agents. Thus marble and chalk are chemically identical, but owing to the difference in their physical structure, the one being crystaline and the other amorphous, the former is much less readily acted upon by acids than the latter. Carbonic acid in the presence of water is a powerful solvent; it not only corrodes the calcareous and magnesian carbonates, whether they form the principal constituents of the stone or are only present as cementing materials, but is capable even of attacking and gradually decomposing the hardest and most indestructible rocks. In the case of the calcareous and magnesian constituents of stone, carbonic acid acts by transforming the insoluble earthy carbonates into soluble bicarbonates, which are thus removed from the surface of the stone; whilst its influence on siliceous rocks consists in the elimination of the alkaline bases in the form of carbonates, and the separation of the silica in a more or less friable condition. The weathering of granites and their gradual transformation into the several varieties of porcelain clay affords an interesting illustration of the latter kind of action."

In the changes just mentioned, the carbonic acid and water are equally concerned, the water serving not only as a vehicle for the introduction of the carbonic acid into the pores of the stone, but also as a solvent for the products of its action. There are changes, however, to which building stones are subject in which water is the sole agent, and which are more of a mechanical than of a chemical character. The expansion which water undergoes on freezing, and the irresistible force which it then exerts are well known. It is obvious that water freezing within the pores of a stone must exercise a disintegrating action not less powerful than those above referred to. Chemically, therefore, the more calcareous and magnesian the stone, the more rapidly it will be destroyed; and mechanically, the more readily it gives admission to the vaporous or gaseous sulphur acids and water vapor, the faster it will be disintegrated.

Closely allied with stone in most of our structures are the artificial products of clay and sand in the shape of bricks and terra cotta.

In order to secure the best bricks, attention must be paid to the kind of earth, the method of working it, the form into which it is moulded, and the manner in which it is burned. The best brick earth is composed of a mixture of pure clay and sand. Care should be taken to eliminate all pebbles, especially those of limestone formation. These pebbles act as fluxes in burning, and weaken the brick by leaving cavities or causing cracks. If limestone, the burning reduces them to lime and the action of water will afterwards destroy the brick. If, however, small grains of pyrites or other metallic substances be present in small quantities and equally distributed throughout the earth, they assist the vitrification of the brick and are an advantage. Good brick earth is frequently found in a natural state. When it is necessary to mix the clay and sand, experiment alone will determine their relative proportion. If the clay is in excess, the temperature required to semi-vitrify it will cause it to warp, skrink and

* Paper read before the Toronto Architectural Sketch Club by Mr. H. B. Gordon.

crack. If there be an excess of sand, too strong vitrification may ensue.

The quality of a brick depends quite as much on the skill used in its manufacture as in the quality of the earth. After the particles are fully disintegrated, and they have been sifted so as to remove pebbles, they may be either moistened for ordinary brick making or passed on to the press for dry press work. The quantity of water required for tempering will depend on the quality of the earth. The general rule is the less used the better, or just enough to make it so plastic as to be easily shaped. If too much water be used, the brick will not only be very slow in drying, but it will in most cases crack, owing to the surface becoming completely dry before the moisture of the interior has had time to escape.

Too little attention is paid in Canada to the drying of our common brick before burning. Placed as they are in the open air, exposed to the full action of the wind, and to some extent also exposed to the sun, one part dries quicker than the other and the bricks are full of cracks and unequal skrinkage. Here, too, the presence of too much clay will cause cracking, while if there be too much sand, the brittle nature of the brick will cause the arrises to suffer. Plastic bricks should be slowly dried in a shed so protected that the action of wind and sun may not affect one part to the detriment of the whole. It is in this process that the superiority of the dry pressed brick is very apparent. As no water is used, save the moisture contained in the disintegrated earth, no preliminary drying process is needed, the bricks are immediately placed in the kiln, their arrises are not subjected to two handlings nor their surfaces distorted by unequal drying.

In the burning of our ordinary bricks greater care might well be observed in many instances. Whether wood or coal is the better fuel is not so important a matter, although no doubt the sulphurous fumes of coal may produce after results in the color of the brick. The great question is how the heat is applied. My impression is that in many cases it is at once too strong and too short. Were several days added to the time of burning and cooling, and the process not so intense, we would have stronger and better formed bricks.

Another matter that might well receive the attention of architects and brickmakers, is the form of the bricks. Heretofore the bricks have been made to suit the quick handling of them by the bricklayers when laying, without considering specially the best form to obtain a strong and durable brick. Those of us who have seen the thin square bricks of the ancient Roman buildings that have stood the exposure to wind and rain for two thousand years, have perhaps been set thinking whether after all our form of brick is the correct one. Roman bricks are from 1½" to 1⅞" in thickness and from 7½" to 12" square. The squareness possibly would be an objection to the efficient bonding of our comparatively narrow walls, but surely the question of thickness is one that should receive consideration? The German and Flemish bricks are about 2" thick, and no better bricks are made anywhere.

Good bricks ring with a metallic sound when struck, and will bear a smart blow without breaking. Generally speaking, the denser and heavier a brick is for its size, the stronger it is for general use. Also the less water a brick will absorb, the better it is.

The crushing weight that can be sustained by ordinary bricks is very various; varying from as low as 500 lbs. to the square inch up to 10,000 lbs., while the best pressed brick will sustain a crushing weight of 12,000 lbs. With ordinary brickwork the strength greatly depends upon the cementing material. It is not well to calculate upon more than 500 lbs. to the square inch as the crushing weight of good ordinary brickwork, and an outside limit of 1,000 lbs. for select brick built in cement. Kidder's experiments give a range extending considerably higher than this, while Trautwine is considerably below these figures in his estimate. No brickwork should be planned to sustain more than one-fifth of these crushing weights; that is from 100 to 200 lbs. to the square inch of safe load, according to the quality of the brickwork. When we remember that the crushing weight needed to reduce some granites, and even limestones, is over 20,000 lbs. to the square inch, the disparity between them and even the best brickwork is apparent.

The use of brickwork for the foundations of very heavy structures may well be questioned. Also in view of its absorbent qualities it should not be used where dampness and frost may combine their destructive agencies upon it. The strength and properties of mortars and cements require even greater consideration than those of brick and stone, for upon them largely depends the strength and durability of the walling. They are usually the weakest point in construction, and the ultimate strength of the whole wall is dependent upon that of its weakest element.

Limes may broadly be divided into ordinary and hydraulic—the former having its divisions of rich or fat lines, and poor or meagre lines; the latter having three divisions according to their hydraulic qualities. The rich limes are the purest metallic oxides of calcium we possess, and the purer the carbonate of lime from which they are obtained, the richer or fatter they are. When slacked, they swell to twice their original bulk. They never harden when placed in water, and if continuously exposed to the action of water will be entirely dissolved. The best limes are obtained from the closest grained and densest limestones. The poor limes are those which swell but little when being slacked, are soluble in water but do not set, and leave a residuum after dissolution.

For the purposes of making a good mortar, lime should be completely slacked. A few days submission to the action of water would be beneficial in the case of fat limes, so that a complete hydrate may be formed. The old Romans had a law that lime must be three years under the water before being used. While of course this is extravagant exaggeration of the benefits of complete saturation, the idea intended to be conveyed may well be pondered. When we remember the expansion of lime while slacking, the necessity for having that swelling fully accomplished before it is placed in the joints of masonry is worth remembering.

Again, it is well to guard on the other hand against having too much water in the mortar, as in the case of thick walls the drying out of the lime is a problem of importance. A fact to this point is cited by General Treussart who had occasion to demolish in the year 1822 one of the bastions erected by Vauban in the citadel of Strasbourg in the year 1666. In the interior the lime after these 156 years was found to be as soft as though it were the first day on which it had been made. The difference between the manipulation of ordinary and hydraulic limes is seen when it is remembered that the slower the manipulation of the former and the quicker that of the latter the better.

Concerning the quantity of sand to be mixed with lime to make a good mortar, the amount largely depends upon the richness of the lime. Good fat lime will take as much as two and a half times its slacked bulk of sand, or about five times the dry bulk. This is an outside limit, but observation of the ordinary mortar beds of builders seems to prove that they love to keep close to or beyond this limit. For ordinary purposes one and a half times the slacked bulk or three times the dry measure of the lime is a fair guide. A much greater quantity of lime is rather a weakness than an advantage. For hydraulic lime or cements, however, the proportion should generally be less. When more sand than double the amount of cement is used, the cohesive power is likely to be weakened.

One point of vital importance is to have the mortar thoroughly mixed and of a uniform consistency. Extra good results may be obtained by first working up the lime into a paste in a mill, and then mingling the sand and lime in a pig mill. But all precautions in other matters will be in vain unless the quality of the sand is correct. The general terms "clean and sharp sand," which find place in most specifications, may cover a great variety of useful or comparatively worthless earths. Sand of irregular sized grains is best—the smaller ones filling up the interstices of the larger. Where sand is very coarse, it is better to mix some of finer grained structure with it. The grains should be sharp so as to better adhere to the lime. For this reason lake or river sand is usually better than that obtained from pits. The cleanness of sand should not necessarily imply the complete absence of other earthy matters. If the sand be free from alumina or clay and vegetable deposit, the purpose of cleanness is satisfied. The presence of particles of calcareous matter is generally helpful. The sand produced by the disintegration of quartz, schiste, mica and feldspar is one of the best. It is supposed that the presence of potassa in the decomposing feldspar influences the setting of the limes mixed with such sand.

Of the hydraulic limes or cements, much may be written. Chief among them is Portland, so called, which is manufactured from the diluvial clay in the valleys of rivers mixed with certain proportions of chalk, ground in mills with water, and after settlement and drying, burnt and ground to a fine powder. It is very various in quality, as your experience has no doubt found. This is often owing to the imperfect calcination of some portions and the over burning of others. If these be ground together, when the cement is used their differing qualities will be sadly apparent—the one setting quickly and the hard burned cement setting slowly. More frequently, however, at least in this country, Portland cement is spoiled by the careless way in which it is stored and the length of time elapsing between its manufacture and use. It readily absorbs moisture, and consequently should be kept in a dry place. It forms one of our most valuable building materials, and if the reports and expectations concerning the deposits in the bed of a dried up lake in Grey County are realized, I trust we may soon have a superior Canadian Portland cement.

An eminent German chemist, Dr. Pettenhoffer, accounts for the hardening and non-absorbent qualities of Portland cement by showing that the structure of the cement is laminar, whilst that of other cements is globular; the result of this being that the Portland cement particles touch at all points, and therefore admit of no interstices for the lodgement of water so as to promote disintegration.

The strongest Portland cement is heavy, and of a blue-grey color. The lighter cements set more quickly than the heavy, and are brownish in color. The standard quality should weigh about 110 lbs. per bushel, and it should stand a tensile strength of 500 lbs. after the cement has been made and set for 7 days under water. A simple test can be made by making up a small cake of cement and placing it in the water. If there be an over-proportion of clay the cement will become buff. If too highly burned, or if having too great a proportion of chalk in its composition, little cracks will be formed all around the edge of the cake.

The base of all our ordinary hydraulic cements is a carbonate of lime combined with a silicate of clay. Generally the cement stones are burned as found, and the resultant cements vary much in quality. Some very valuable kinds of cements are those known as Magnesian, and made principally from dolomite. These stones when calcined and powdered, form a cement which, when set in water, forms a stone of extraordinary hardness.

In 1882 a series of tests of the strength of brick piers laid with various mortars was made at the United States Arsenal at Watertown, and the following table will show the results upon the 8"x12" piers built of common brick. Those in lime mortar cracked under 833 lbs. to the sq. inch; those in lime mortar 3 parts, and Portland cement 1 part, cracked under 1,875 lbs. to sq. inch; those in lime mortar 3 parts, and Newark and Rosenda cements 1 part, at 1,354 lbs. to sq. inch; those in lime mortar 3 parts, and Roman cement one part, 1,041 lbs. to sq. inch; those in Portland cement 1 part, and sand 2 parts, 1,302 lbs. to sq. inch; those with Newark and Rosendale cements 1 part, and sand 2 parts, only 708 lbs. to sq. inch; and those in Roman cement 1 part, and sand 2 parts, 1,770 lbs. to sq. inch.

From these it would seem that the strongest mortar for crushing weights is that composed of 3 parts of lime mortar and 1 part of Portland cement; while that with 1 part of Roman cement to 2 parts of sand was nearly as strong up to the cracking point, but its ultimate strength was much less than that with Portland cement 1 part, and sand 2 parts.

The consideration of wood as a building material opens up a wide range of investigation and judgment. In deciding upon the use of any wood for construction or decorative purposes, three principal matters demand consideration. 1st. Its intrinsic character; 2nd. Its suitability for the position proposed; 3rd. The best method to secure its preservation. As to the character of wood, a few general elementary matters may bear repeating. Observing the cross sections of any of our exogenous trees, there is revealed the outer bark, the liber or inner bark, the cambium or transitional fibre from which is developed both the liber and the wood fibre, the alburnum or undeveloped wood, the true wood and the central pith.

One good token of sound serviceable wood, is the clearness and firmness of the bark and the small quantity of alburnum. Another is the uniformity and depth of color, for if the wood lightens rapidly to the alburnum, it is a likely sign of disease. Another good sign is the fresh and agreeable odor it exhales when cut, for diseased sap will make itself known by its unpleasant smell. Another desirable feature is equality in the size of fibre, and a uniform growth and development as evidenced in the concentric rings.

Good wood is elastic, tenacious and solid, and emits a sonorous sound when struck. It cuts clean with the saw, and is bright in color and has a silky lustre when planed. Diseased wood, on the other hand, emits a dull sound when struck, leaves a wooly edge when saw cut, and is dull and flat after the plane. Unfortunately now that so much of our timber has been cut, much that formerly was passed by as inferior, is now resorted to by the lumberman. Trees are cut up for timber which are either diseased or have been subjected to adverse circumstances, and in many cases are partly dead. When from disease of the sap, a portion of a tree becomes dead, the fibres lose flexibility and strength, and are easily subjected to rot and decay. Among other diseases of the sap is that called plethora, which by reason of the over abundance and irregular supply of sap causes the fibre of the wood to be of unequal texture, and consequently untrustworthy for constructional purposes. The action of frost frequently causes defects in the wood by hindering the transformation of the alburnum into solid wood, causing division of the concentric rings and producing shakes. When growing timber has been subjected to alternations of strong frosts and thaws, the wood is often part live and part dead, and filled with small clefts. Twisted fibres, caused by the mechanical action of the wind on growing trees, renders much wood unfit for transverse strains. If a tree be grown in swampy ground, the continual saturation of the roots does not give the sap those essential qualities necessary for the production of good strong wood. Generally speaking, the woods grown in good soil, where there is not too much moisture, are the best. Trees growing in the open, or at the edge of a wood, where the influences of sun and wind are most felt, usually furnish better timber than those growing in the dense forest. The heaviest wood usually the strongest of its kind. The presence of knots weakens

strength of a timber, not only by reason of their own area, but also because of the cross grain thus formed. Black or dead knots form an additional danger by reason of their decay and the possibility of its transmission to the rest of the wood. I need hardly add that the white wood or alburnum of trees should be rejected in all cases, it being imperfectly formed fibre without strength or lasting qualities.

The next consideration is as to the kinds of wood most suitable for different building purposes. For positions where durability is the principal consideration, such as piles, foundation planking or other substructure, the decision will largely depend upon whether the place be wet or dry or subject to alternations of the same. In positions constantly wet, oak has been known to remain perfectly sound for hundreds of years, whereas if it be exposed to alternations of wet and dry, a few years will accomplish its destruction. Chestnut, while not as strong as oak, stands variations of damp and dryness very much better. This is especially the case with timber cut from comparatively young trees. Wood of this description has been known to last in trying positions over 50 years. Pitch pine also is very valuable for such positions, its highly resinous nature forming an excellent preservative. The larch is exceedingly durable, and is very valuable as post piles or sleepers. But probably the prince of woods for such positions is the red cedar, when cut from a healthy, live tree. If the purpose be simply for piling or hydraulic works constantly subject to water, the elm will be found very durable.

When the strength required is largely compressive in a transverse direction to the grain, such as in templates and other bearings, the relative value of our more common woods may be placed in order as follows: Black and yellow locust; sugar maple; ordinary scrub and swamp oak; hickory and ash. While lower down in the scale of value are birch, sycamore, cherry, elm, ordinary maple and Georgia pine. Where, however, these templates or bearings are exposed to the adverse action of damp and dryness, or where they are built up in a wall, the permanent properties of the woods need quite as much consideration as their sustaining strength. Where the properties required are mostly of compressive strength in the direction of the grain of the wood, such as in posts, the relative values of the woods in order is about as follows: Locust, Georgia pine, birch, live oak, beech, sugar and black maple, cherry, ash, rock elm, ordinary oak, pitch pine, white and red maple, red cedar, white pine, spruce and hemlock. The degree and manner of seasoning will, however, determine the relative values of some of these woods. Well seasoned woods resist crushing strains nearly twice as well as green woods. Where the strength needed is transverse, such as in beams and joists, from conflicting authorities I have endeavored to arrange the following list in their order of merit, viz: beech, Georgia pine, ash, oak, birch, hickory, maple, spruce, elm, yellow pine, white pine and hemlock. In such positions the straightness of grain, the uniformity of fibre and the freshness and density of the wood, form very important factors. Where the force applied is a shearing strain, such as in roof framing, trussing, &c., the more valuable woods are white oak, pitch pine, spruce and resinous pine. Where the weight is supported by tensile strength, such as in king posts, locust, ash, birch, alder, chesnut, elm, beech, hickory, maple and oak. Where wood is exposed to twisting or torsion strain, hickory, locust, white oak or ash. Besides these considerations of purely constructive strength, there are the effects of wear and tear to be considered, such as in floors, &c. Here a close grain as well as a hard texture is desirable hence the valuable properties of maple, tamarac, birch and Georgia pine. Also the avoidance of those woods that splinter or raise in the grain such as hemlock, and others that decay rapidly when alternately wet and dry, such as oak and ash. Then, again, it is very necessary in exposed positions to avoid woods that curl and warp or are subject to great alternations of contraction or expansion. Some woods by reason of their non splintering qualities are very useful and may be relied upon for sink cappings, counter tops, and such places, ranging from the soft popular up to the sycamore and walnut. Others again are valuable for their insect resisting properties, such as red cedar for shelving, closets, &c. Indeed there is hardly any special position or requirement about a building, but demands the special allocation of some wood best adapted for the purpose.

In conclusion I might briefly refer to the very important subject of the preservation of timber. Of course the first requisite is thorough seasoning, as without this the application of any preservative is useless. The removal of the sap from the wood in order to prevent its fermentation and the consequent destruction of the fibre is the matter of most importance. Mere drying, particularly if it be done quickly, will not accomplish this, but may merely dry up the vegetable matter held in solution in the sap, and leave it there for future action in case of dampness or atmospheric influence. The lumberman's method of floating his logs to the mill has greatly assisted in the seasoning of our timber; the action especially of running water being very useful in washing out the sap. Continued saturation, however, has a tendency to greatly weaken the constructive strength of timber, so for carpenter work the wood should not be left long in the water. After the water has gradually dried out of timber, it may be subjected to the dry kiln; but wet or green lumber submitted to such a test warps and cracks in a discouraging manner. One disadvantage of kiln dried wood is the avidity with which it afterwards absorbs dampness from the air; so that where at all practicable, the old fashioned method of long stacking under cover but exposed to the free action of the air is to be preferred. Where possible, kiln dried stuff should be treated to a coat of paint or some other preservative immediately upon its being removed from the drying pile. The use of preservatives to timber is two-fold, viz., either by their presence to arrest and retard the fermentation and putrefaction of the natural juices, or granted the natural juices have been expelled by thorough seasoning, to so close the pores of the wood as to prevent extraneous action; or in the case of protection against ants and worms the coating with some antagonizing substance. The chemical solutions most generally employed to saturate wood for its preservation are: corrosive sublimate, in the system called "Kyanizing"; chloride of zinc according to Burnett's method; sulphate of iron and muriate of lime, and also sulphate of zinc in combination with other substances. Each of these has some special feature of value, but along with it some serious objection. A Committee of the American Society of Civil Engineers after collating a large number of experiments, recommended Burnettizing for damp exposures and Kyanizing for comparatively dry situations. The best known all round preservative is creosote oil; it fills the wood vessels, coagulates the albumen, prevents the absorption of moisture, is fatal to animal and vegetable life and so repels the attacks of insects or the growth of fungi. Unfortunately, however, its smell is so nauseous that its use in a dwelling house is practically impossible. A weak solution of lime has a decidedly preservative effect upon timbers, and may advantageously be used when the work treated is not exposed to the action of rain. For exposed unpainted work, resins dissolved in essential oils render wood impervious to water. For preservation of the surface of woods against the action of sun and rain, nothing perhaps is more valuable than alternate painting and sanding for two or three times; care being taken that a purely siliceous sand, clean and dry, is used. In conclusion I might reiterate the necessary caution, that wood should be perfectly dry before being treated with paint or any other preservative.

ONTARIO ASSOCIATION OF ARCHITECTS.

A FULL meeting of the Council was held in the rooms of the Architectural Sketch Club on May 7th. The proof of the By-laws, as revised, was submitted, and after some emendation was approved of in full. The By-laws will shortly be published. The curriculum and examinations for students were definitely settled. The following text books were approved:

1. HISTORY OF ARCHITECTURE STYLES AND ORDERS.
   Gwilt's Encyclopedia (edition 1888) Fergusson's "History of Architecture," Stewart and Rivette's, Bohm's Edition, Chamber's "Civil Architecture"; Rickeman's and Bloxam's "Gothic Architecture"; Parker's Glossary; Parker's "Introduction to Gothic Architecture."
2. MOULDING AND ORNAMENT.
   Paley's "Gothic Mouldings"; Brandon's "Analysis of Gothic Architecture."
3. DRAWING.
   Architectural Perspective—F. A. Wright.
4. ELEMENTS OF CONSTRUCTION AND MATERIALS.
   Reid's "Cements"; Clark's "Building Superintendence"; Wightwick's "Hints to Young Architects."
5. GRAPHIC STATICS, ETC.
   Stoney's "Strains"; Kidder's "Architects' and Builders' Pocket-Book."
6. SANITARY SCIENCE, HEATING AND VENTILATION.
   Baylis "Plumbing and House Drainage"; Baldwin's "Steam Heating"; Parke's "Manual of Practical Hygiene"; Billing's "Ventilation."
7. ARCHITECTURAL JURISPRUDENCE.
   Gibbon's "Law of Contracts" (Weales series).

A copy of each text book will be deposited in the library of the Association. The following books were also recommended to be purchased for the library:

Stevenson's "House Architecture"; Viollet Le Duc's "Discourses on Architecture"; Viollet Le Duc's "Habitations of Men in all Ages"; Pugin's "True Principles of Gothic Architecture"; Pugin's "Apology for the Revival of Gothic Architecture"; Ricker's "Roof Trusses"; South Kensington "Notes on Building Construction"; Vignole's "Five Orders"; Parker's "A. B. C. of Gothic Architecture"; Osborne's "Notes on House Planning"; Jenkins' & Raymond's "Architects' Legal Hand-Book"; Taylor & Creasy's "Italian Architecture."

A Committee was appointed to select and purchase additional books for the library. Mr. W. A. Langton was appointed librarian.

It was decided that since at the last Convention a by-law was passed making the Association year begin on the 1st of January, and as many of those who registered prior to the passing of this by-law expected their registration fees to cover all dues to the 1st August, therefore these members who paid the fee for the year 1890 shall be required only to pay three-fifths of the annual fee for 1891.

At the last Convention of the Association, a resolution was passed requesting the Council to endeavor to ascertain the nature of the building stones in the Province, Prof. Galbraith having volunteered to co-operate with the Association in this matter by giving them the use of a testing machine at the School of Practical Science, a Committee was appointed to obtain the necesary specimens and conduct the experiments and to publish the results for the benefit of the Association.

A letter was read from Vancouver, B. C., requesting a copy of the By-laws and Act of Incorporation to assist in the formation of a similar Association in British Columbia.

The time for sending in designs for the Association seal was extended to July 1st, 1891, and the premium was fixed at $25. Only registered architects are invited to compete, and no premium will be given unless the designs are approved by the Council.

In the matter of the Presbyterian Church Competition, as only two designs have been submitted, neither of sufficient merit to justify the Council in appointing a Committee to judge the designs, it was thought best to confer with the Board of the Presbyterian Church before taking further steps. There will probably be a new competition, which it is intended shall be brought to the notice of every member of the association by the Committee having the matter in hand, so that the competition may be taken up in a manner more worthy of the object.

It was decided that as the time for registration of practising architects has been already twice extended by the Council, no further applications for registration will be received unless accompanied by a certificate showing the applicant to have passed the examination required by the Act, The students who have registered will shortly be graded according to the length of time of service and every student will be notified of the examinations necessary to be passed by him and on what dates. A circular containing the curriculum, text books and other information necessary for students preparing themselves for examination will be sent to all students.

A Committee was appointed to draft conditions of competition

acceptable to the Association, as was requested by the Council at the last Convention.

Mr. Wright, the lecturer on Architecture at the School of Practical Science, sent a communication requesting that members of the Association would send drawings to the school, each to remain some time so as to establish a permanent exhibition for the instruction of the students in architecture. The Council appointed a hanging committee, consisting of Messrs. Connolly, Darling and Langton, to select from drawings submitted such as they may think suitable for hanging upon the walls of the School and for the use of the students.

THE POINTED OR ENGLISH STYLE OF ARCHITECTURE.

By "H. B."

[Concluded from January Number.]

THE Order of Decorated English Architecture may be said, in general terms, to be distinguished by the following marks: The expansive scale of its windows, which in the best ages of this style display the pointed form in most just and beautiful proportions, and, under all its variations, are divided into several lights, having the heads adorned but not crowded with tracery work; the unity of its columns, which in earlier ages consisted of many slender, detached shafts; the increased richness of the vaulting, which important part of the interior retained, as we have seen, much simplicity even in the most dignified buildings of the preceding class; the introduction of tabernacle work, and plentiful, but not superfluous, ornaments, comprising various graceful, but in many instances, nameless particulars of embellishments on those parts of the inside and exterior which were left plain by the architects of the previous era.

The arches of this order exhibit a considerable degree of variation, but are less acute and more open. That which approached the nearest to perfection of any pointed arch and which prevailed in many buildings constructed during the sway of the three Edwards "being formed by segments of a circle, including an equilateral triangle from the impost to the crown of the arch." In subsequent reigns the arch becomes lower, and consequently loses a portion of symmetry and beauty. In the fourteenth century, arches of the ogee shape, formed of four segments of a circle contrasted, were very common, and are said to have prevailed especially in the tombs of the crusaders. The columns, Mr. Bentham states, were not now detached, or separate, from the body of the column, but made part of it; and being closely united and wrought up together, formed one entire firm, slender, and elegant column. Mr. Essex states that marble was almost universally employed in the construction of pillars in great buildings until the latter end of the reign of Edward the Second, but was only partially used by the architects of Edward the Third's time, and was quite rejected before the termination of that historical era.

In regard to the roof, the vaulting, in common with every other part, became greatly decorated. The ribs branched out into a kind of tracery work, and divided the vaulting into numerous angular compartments, ornamented at the intersections with carved heads, foliated orbs, and various devices having an historical or legendary allusions.

To use the words of Dr. Milner, the window no longer consisted of an arch divided by a mullion into two, and surmounted with a single or triple circle, or quatrefoil, but was now portioned out by mullions and transoms, or cross-bars, into four, five, six and sometimes into nine bays or days, as the separate lights of a window were called; and their heads were diversified by tracery work into a variety of architectural designs, and particularly into the form of flowers. In these windows we behold, disposed with lavish magnificence, the attractive and appropriate splendor of painted glass, conducive to the intended object of the structure by illustrating passages of sacred history, revealing tales of saints and martyrs and perpetuating in the rude portraiture of the times the effigies of kings, prelates, and founders.

The adoption of eastern windows appears to have first occurred in the thirteenth century, and led to an alteration in the form of that part of the church; but the practice of constructing windows of large dimensions, both in the more sacred part and in the western extremity, obtained so much esteem in the early part of the era now under notice, that we find them frequently introduced as alterations of ancient structures, which were otherwise allowed to remain in their original state.

The capitals of the clustered columns were often richly foliated, and the arches of windows were invariably adorned with one or more casps on each side of the head, so as to form trefoils, cinquefoils, &c.

Where pediments were raised over arches they were uniformly purfled or adorned with those representations of foliage termed crockets. The arches, thus surmounted with architectural decorations, were also accompanied by pinnacles constantly purfled and crowned with a fincial or flower. Many new mouldings occur in this Order, and rows of small ornamental arches are frequently seen. The niches which remained plain, or subject to little ornament in the previous mode were now richly embellished, and together with tabernacles (or niches of a more elaborate display) were constructed with an unsparing hand, and filled with statues, in many instances executed with considerable spirit.

Spires grew into frequent use in the early years of this era. Well calculated for popular admiration from the subject of wonder connected with their aspiring height, their introduction was hailed with enthusiastic applause. The retired village church enwrapped in woodland, or situated amongst soft rural scenery, acquired a pleasing and consonant addition in the light, unassuming proportions of this new feature; the sacred structure of the city or great town was perhaps more suitably adorned by the less elevated but commanding tower.

The rise of every architectural style is so entirely progressive that although the date of its perfection may usually be ascertained with sufficient certainty, it is often difficult to distinguish the exact years of its commencement. Thus the early part of the reign of Edward I, 1272 to 1307, has a great similitude to the architecture of the reign of Henry III. Structures erected in this reign: Several parts of Exeter Cathedral, Devonshire—the transepts were formed in the early parts of this reign—the choir (begun in 1138) was finished in 1309; St. Ethelberts' Gatehouse, in the precinct of Norwich Cathedral, Norfolk, erected about 1275; the cloisters of Norwich Cathedral, Norfolk; the Lady Chapel; Lichfield Cathedral, Stafford; the nave of York Minster, Yorkshire, begun in the year 1292, and completed in the next reign. The style of the architecture throughout the reign of Edward the II, from 1307 to 1327, was the same in its leading features as in the latter years of King Edward I.

In the reign of Edward the III, from 1327 to 1377, Mr. Carter observes that the architecture of this bright era was in its highest degree of perfection. The plans and elevations were on the grandest scale, the proportions just, the decorations ample and majestic, and the enrichments splendid. The mullions and tracery of the windows ran out in the most delightful and elegant manner. The buttresses became one of the principal features from their infinity of parts and high embellishments. The parapets or breast works on the walls are changed into battlements with perforated compartments. The cluster of columns to all situations are masoned in one solid mass in their several courses, without bands, the shafts rising from base to capital in a clear and uninterrupted line. The groins present tracery compartments. Structures erected this reign: The octagon and lantern of Ely Cathedral, Cambridgeshire, completed 1342; the St. Mary Chapel, of the same building, erected between 1321 and 1349; choir of Carlisle Cathedral, Cumberland; part of south transept, parts of the north transepts, choir and cloisters Gloucester Cathedral; parts of the nave, side aisles, &c., of St. Alban's Abbey Church, Herefordshire; parts of the Church of St. Mary, Redcliffe, Bristol, Somersetshire; choir of the Church of St. Mary, Warwickshire; St. Stephens' Chapel, now the House of Commons, Westminster, and deprived of its ancient architectural character. It was was begun in 1348. In the reign of Richard the II, from 1377 to 1399, the pointed arch began to drop in height, or depart from those regular triangular proportions which constituted its purest and most beautiful form. Structures erected in this reign: Wykeham's work, comprising great part of the nave, Winchester Cathedral, Hampshire; college at Winchester, founded by Wykeham; nave, chapter house, and part of the cloisters, Canterbury Cathedral, Kent; the tower and spire of St. Michael's Church, Coventry, Warwickshire, begun 1373, completed 1395. No variation in ecclesiasitcal architecture requiring notice are distinguished in the martial reigns of Henry the Fourth, from 1399 to 1413, and Henry the Fifth, from 1413 to 1422. In the reign of Henry the Sixth, from 1422 to 1461, the decorated style of English architecture proceeded to the verge of that redundance in embellishment, which constitutes a new era. Structures erected in the reign of Henry the Sixth: The Chapel of Kings' College, Cambridge, Cambridgeshire; Beauforts Chantry, Winchester Cathedral, Hampshire; the Chapel of the Virgin, Canterbury Cathedral, Kent; the Divinity School, Oxford, Oxfordshire; the Beauchamp Chapel, Warwick, Warwickshire.

The Florid, or highly decorated English style, is chiefly marked by the depressed obtuse form of its arches; its large, wide windows, divided by numerous mullions, and ornamented with an intricate redundance of tracery, the inexpressible richness of its vaulting, over which the most delicate fretwork is thrown like a "web of embroidery," interspersed with ponderous and highly wrought pendant capitals, and by the profusion of tracery-work, sculpture, armorial devices and other ornamental particulars which embellish every part of the structure. The arches, as has been mentioned, are wide and flat or obtuse. The roof has been briefly noticed as displaying a scene of unparalled splendor and delicacy. The ribs of the vaulting which had before been large and apparently intended to add to the strength and support of the groins, were now divided into numerous parts and enriched with a profusion of armorial cognizances, badges, rebuses, and various sculptured devices; clusters of pendant ornaments resembling stalactites, or to use the words of Mr. Bentham, "the work Nature sometimes forms in caves and grottos," hang down from these elaborate roofs and impart to them an air of imposing beauty.

The point of the window arch was flat, the window extremely wide and descending low, the mullions numerous and the upper division of the windows filled with many small compartments, often having trefoil heads. The great multiplication of windows afford a prominent characteristic of this style.

The ornaments of this architectural class were distributed in gorgeous profusion. The most estimable consists of numerous statues of kings, queens, saints, prelates and other persons. The abundant niches, tabernacles, canopies, pedestals, tracery facias, and pendants are of the most elaborate workmanship, and are usually finished with exquisite delicacy. Painting and gilding were frequently employed to heighten the magnificent character of the whole. In the unique instance of Henry the Seventh's Chapel, the ornaments of the exterior are almost as plentifully disposed as those of the interior.

The most splendid examples of the structures erected in the reign of Edward IV, 1461 to 1483, is afforded by St. George's Chapel, Windsor. This structure is the work of several reigns, but the design and greater part of the present edifice are generally attributed to Richard Beauchamp, Bishop of Salisbury, who was appointed master and surveyor of the work by King Edward the IV; Church of Honiton, Devonshire, greatly enlarged and ornamented by its curious screen; parts of the Church of Charing, Kent, including the tower; Church of St. Lawrence, Norwich, Norfolk; Chapel on the bridge of Wakefield, Yorkshire, built by King Edward the IV in memory of his father and those of his party who fell in the battle at that place.

Reign of Edward the V, 1483, and reign of Richard the III, from 1483 to 1485, were too short and troubled to afford any distinguishable change in the national style of architecture.

During the reign of Henry the VII, from 1485 to 1509, the Florid style in the plentitude of its costly and elaborate characteristics is chiefly exemplified in chapels, regal, mortuary and attached to churches; and in porches, monuments, screens, thrones and stalls. It is remarked by Mr. Dallaway that "there is, perhaps, no parish church which exhibits a complete specimen of this style in all its parts."

Structures erected in the reign of Henry the VII: Bishop Alcock's Chapel, Ely Cathedral, Cambridgeshire; Church of Walden, Essex, finished in the reign of Henry the VII; the Lady Chapel, Gloucester, Gloucestershire, cathedral built in 1499; parts of the Church of Cirencester, Gloucestershire; Chantry of Bishop Wayneflete, Winchester Cathedral, Hampshire; St. Mary's,—the University Church—Oxford; Church of Dunster, built by Henry the VII, Somersetshire; the Chapel of King Henry the VII, Westminster, commenced in this reign and executed according to the design then formed; Church of Great Malvern, Worcestershire.

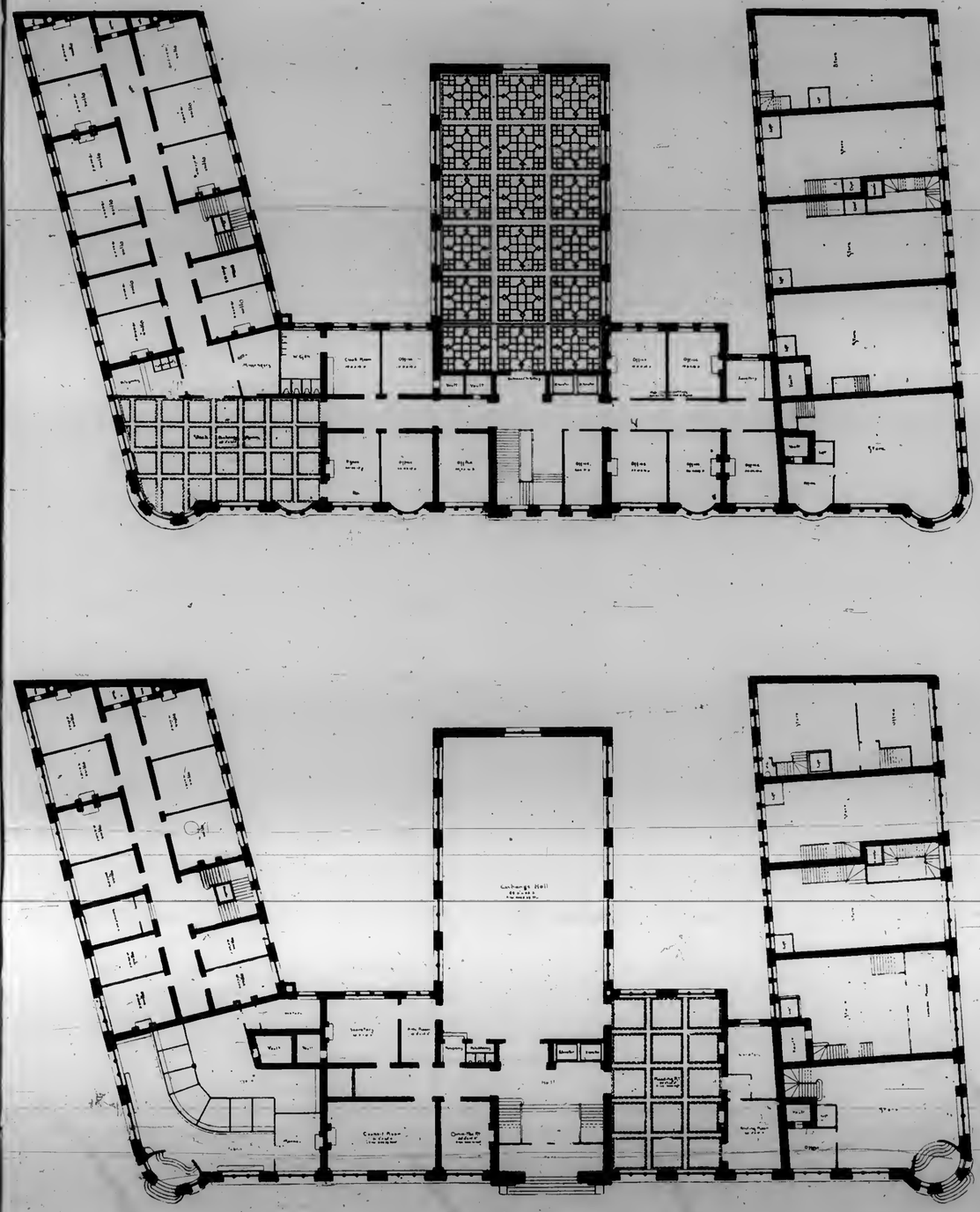
After the reign of Henry the VII, the pointed style of architecture declined rapidly in excellence, and soon fell into entire disuse. With the dissolution of religious houses was rejected the mode in which it had been so long customary to erect the buildings appertaining to such foundations. The Italian artists, whose prejudice against this style has been already noticed, were unquestionably instrumental in accelerating its downfall, by incongruous mixtures of irregular and ill-executed imitations of the Grecian orders with the declining English, a proof of barbarity in taste. This base comixture, and degradation even of the relics of a fine and venerable mode of architecture (further polluted by the addition of numerous absurd devices) remained in practice until the Grecian style, in its purity was revived by the mature judgment of Inigo Jones, in the time of Charles the I.

One of the last buildings approaching to the character of pure English, that was erected in the time of Henry the VIII, is the Abbey Church of Bath, completed in 1532. Lord Oxford observes that he recollects no later instance of the unmixed Gothic, than the tomb of Archbishop Warham, Canterbury. This monument was constructed soon after the year noticed above as that in which the Abbey Church of Bath was finished.

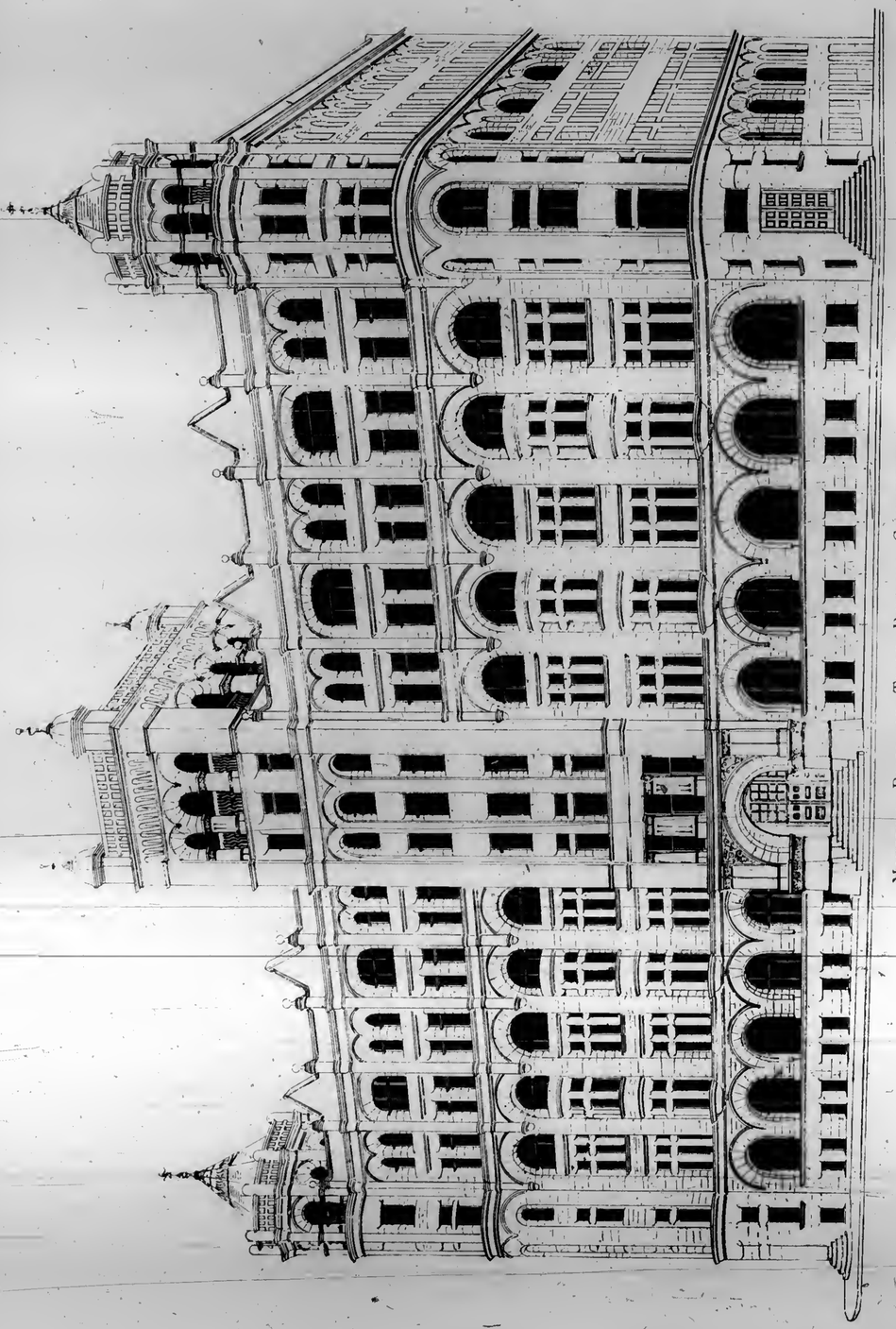
Mr. Samuel Cabot, of Boston, the well-known manufacturer of exterior stains, has sent us a finely engraved and printed illustration, which happily suggests the pleasing effects attainable by the tasteful use of exterior coloring.

TORONTO ARCHITECTURAL SKETCH CLUB COMPETITION FOR "AN ENTRANCE TO A PARK."
DESIGN BY W. R. JOHNSTON, AWARDED FIRST POSITION.

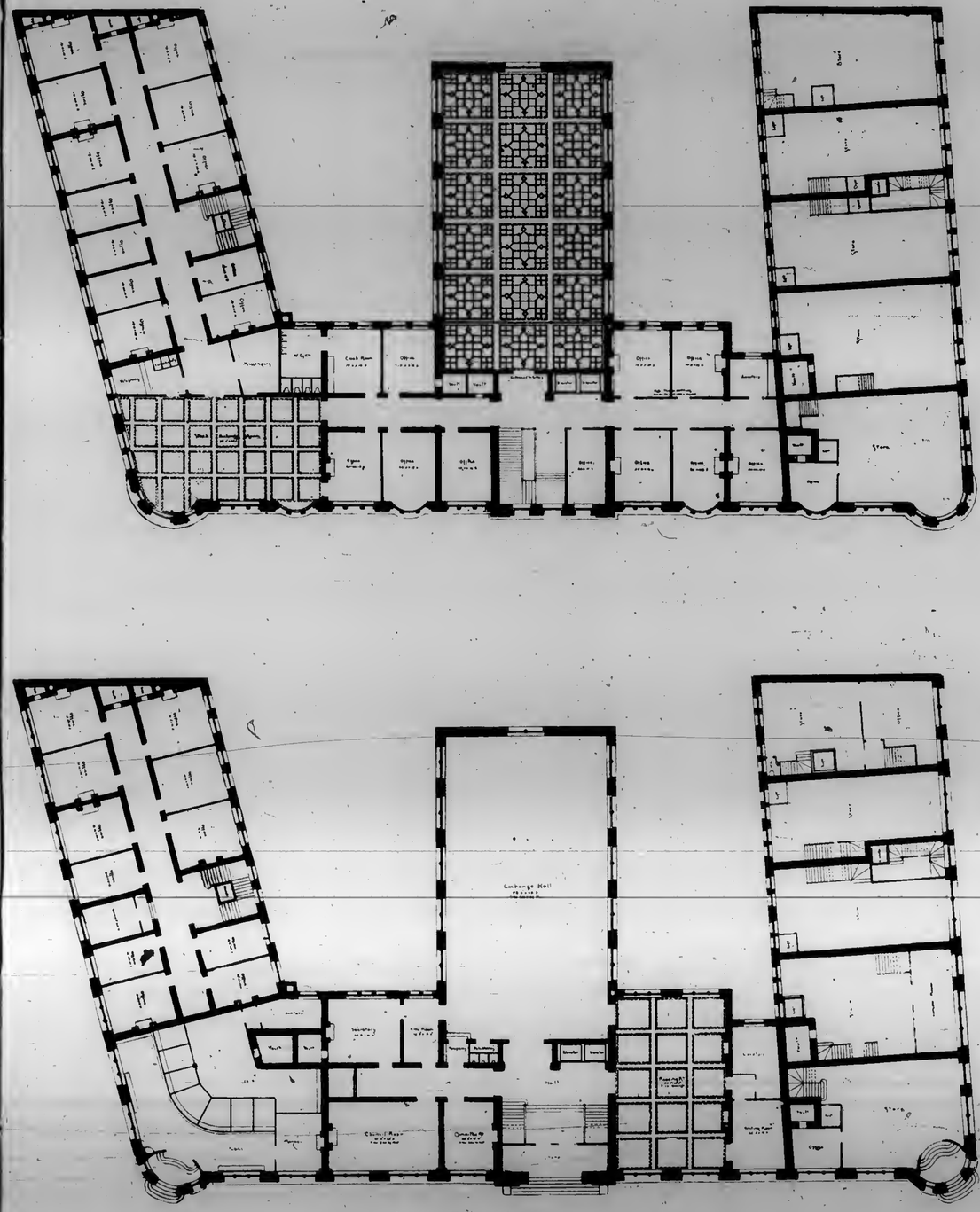
Montreal. Board of Trade Building Competition.
Design Submitted by Mr. J. Rawson Gardiner, Montreal.



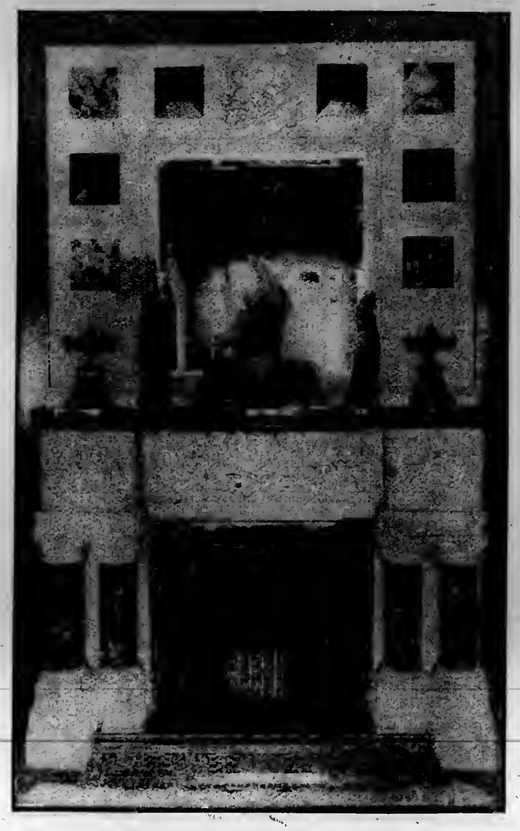
Floor Plans.



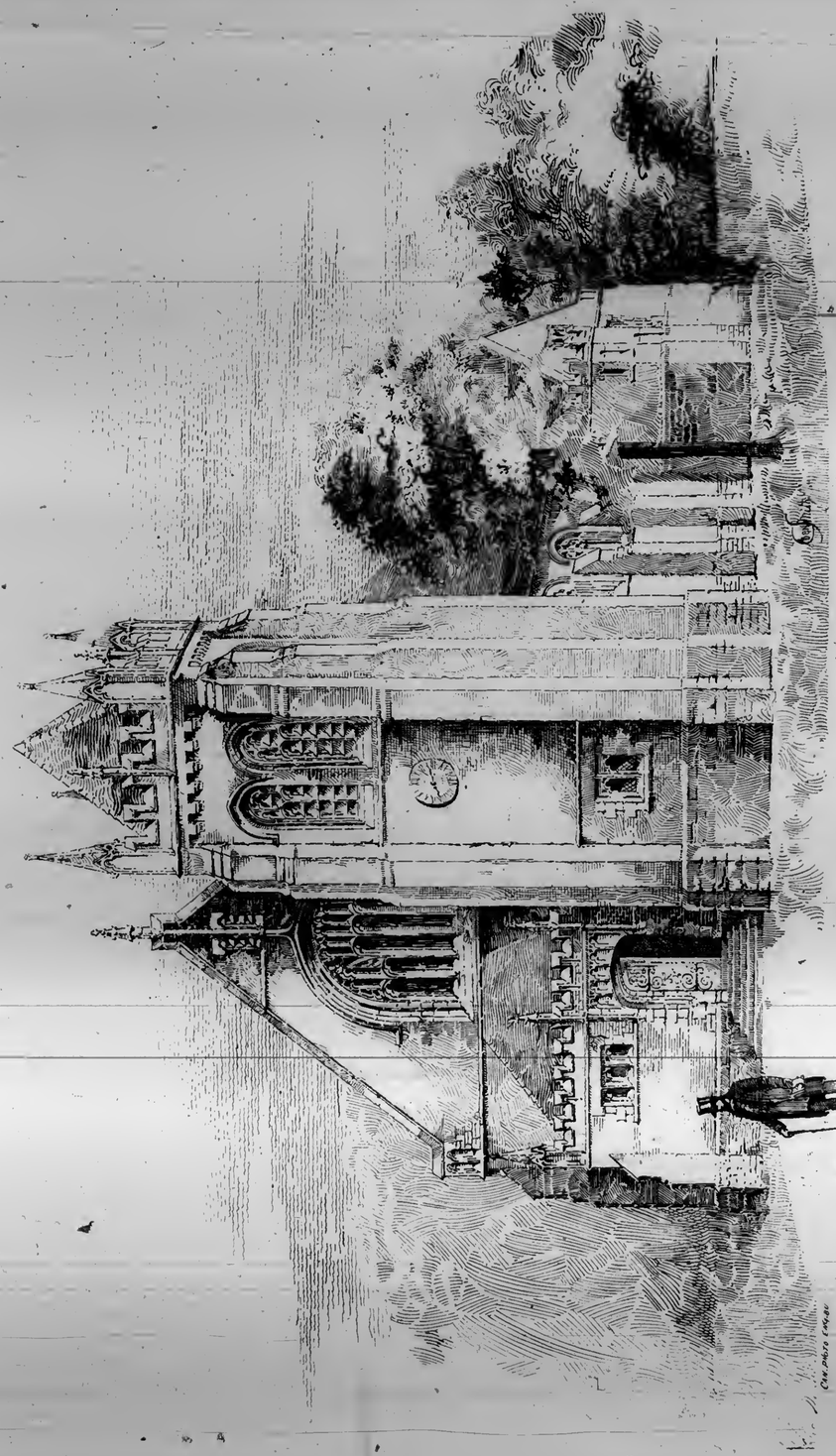
Montreal Board of Trade Building Competition.
Design Submitted by Mr. J. Kawson Gardiner, Montreal.



Floor Plans.



Stone Mantel in Residence of Mr. P. Lyall, Montreal.
John James Brown, Architect.



St. Paul's Church, Wingham, Ont.
Messrs. Strickland & Symonds, Architects, Toronto.

CANADIAN ARCHITECT AND BUILDER.

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—THE—

CANADIAN ARCHITECT AND BUILDER,

A Monthly Journal of Modern Constructive Methods,

(With a Weekly Intermediate Edition—The CANADIAN CONTRACT RECORD),

PUBLISHED ON THE THIRD SATURDAY IN EACH MONTH IN THE INTEREST OF

ARCHITECTS, CIVIL AND SANITARY ENGINEERS, PLUMBERS, DECORATORS, BUILDERS, CONTRACTORS, AND MANUFACTURERS OF AND DEALERS IN BUILDING MATERIALS AND APPLIANCES.

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EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The "Canadian Architect and Builder" is the official paper of the Architectural Associations of Ontario and Quebec.

The publisher desires to ensure the regular and prompt delivery of this journal to every subscriber, and requests that any cause of complaint in this particular be reported at once to the office of publication. Subscribers who may change their address should also give prompt notice of same, and in doing so, should give both the old and new address.

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THE regular fortnightly meetings of the Canadian Society of Civil Engineers, at Montreal, have been withdrawn during the months of June, July and August.

CANADA is usually credited with holding the most advanced position among the colonies of Great Britain. In the matter of associations for the advancement of the interests of builders and contractors, however, we must take second place to Australia and even Tasmania, where organizations of this character are fulfilling a useful purpose.

OUTSIDERS will be apt to think that building enterprises on an extensive scale are unknown in Hamilton, when they see paragraphs in the daily papers of that city referring to the issuing of permits for improvements costing less than $2,000, headed "Signs of the Building Boom." Straws may show which way the wind is blowing, but to predicate a building boom on such slight evidence, denotes extraordinary sanguinity, or an imperfect conception of the meaning of the term.

A VERY practical suggestion for the preservation of the true alignment of curb stones comes from Holland. It consists in the cutting of a hollow in the end of one stone and the working of a corresponding projection on the next. In our climate, where king frost plays such havoc with the roads and pavements, this method would prevent much of the unsightly irregularity inevitable to the usual manner of setting curb stones, and the extra cost would be offset by the greater length of time which would elapse before they would require to be re-set.

It is no uncommon thing to observe in the very centre of our Canadian cities large areas of vacant land owned by religious corporations, on which no taxes are levied. These lands, while standing as a bar to progress are nevertheless greatly enhanced in value by surrounding improvements carried out by private enterprise. In this way the owners grow rich at the expense of their neighbors who assist progress and pay the taxes. Whether or not churches should be taxed, as some contend, it seems but right that the law should be amended to the extent necessary to remedy this injustice which is being perpetuated under its present provisions.

THE Architectural Sketch Club filled up the little room allotted to them at the Ontario Society of Artists' Exhibition with a very interesting series of sketches, many of which were the results of their last season's studies and competitions. The progress of the Club is very noticeable, and the rendering of many of the drawings showed decided artistic ability. We were sorry to notice the tendency to use their room as a store room, giving it an unused appearance, uninviting and somewhat forlorn. It is difficult enough to get the general public to take an interest in architectural drawing, without the bar of an unattractive room.

THE Toronto *Mail* recently contained an editorial on the question of the payment of the clerk of the works on the new City Hall at Toronto, which is entirely to the point and should be read by all laymen, and especially by the members of city councils and other public bodies. The attempt of some of the aldermen to saddle upon the architect even half the expense of the clerk of works is preposterous, and is a cheese-paring policy which can only be detrimental to the work from every point of view. As well might City Engineer Jennings be asked to pay

half the fees of his inspectors. The work is for the benefit of the city, not of the architect, who has already had his fees cut down one per cent. In England an architect is paid the full rate of fees and given a clerk of works as well. The architect should, of course, nominate the clerk of works, being the proper judge of his qualifications and dependent on him for the careful continuous supervision necessary.

THE city of Toronto is sufficiently lacking in public pleasure grounds to make it desirable that those which it does possess should receive the attention necessary to maintain their highest attractiveness. The erection of the Ontario Legislative buildings has largely robbed the Queen's Park of its space and beauty. Queen's avenue might be much improved, but not by the laying of plank sidewalks such as it is stated to be the intention of the city to put down. The Parks and Gardens Committee should endeavor to secure for Queen's avenue the construction of an asphalt roadway and stone or concrete sidewalks.

WITHOUT desiring to bring about changes which would impair the security of the buildings in our cities from destruction by fire, the wisdom of the regulations limiting the materials to be used in residence districts to brick and stone may nevertheless be questioned. While brick and stone may be necessary in closely built localities where a few feet at the most separates one building from another, why should the limit be drawn at these materials where under the terms of his purchase the owner of land must erect a detached dwelling on a lot of at at least fifty feet frontage? Is the loss by fire in Canadian cities less than in American cities like Detroit, where wood is more largely used? If not, then our city building laws should be amended in this particular, in order that architects may have an opportunity by using wood and other materials to achieve the artistic variety of effect which is so pleasing a feature of the residence portions of some American cities.

IT will be remembered that last year the Board of Walking Delegates of the New York Trades Unions endeavored to boycott certain brickmakers. The combination formed by the brickmakers was not sufficiently organized, and the struggle was consequently prolonged, but eventuated in the defeat of the delegates. It appears that this defeat did not teach these individuals wisdom. This season they have fallen foul of the lumber dealers, one of whom refused an insolent bully permission to inspect his shop. Boycott of course followed. The dealers combined in self-defence, stopped delivery of lumber in the troubled district, throwing about one hundred and fifty thousand men out of employment, and bringing the autocratic delegates to their knees. The experience thus gained has proved that the haughty and high handed proceedings of these parasites of the unions can be speedily nipped in the bud by well organized combination on the part of employers, and that they can exercise their power with impunity on individuals only.

WE noticed the other day in one of our dailies an advertisement signed by a "Village Clerk," asking surveyors to tender for the survey and drawing of a plan of the village. The notice wound up with the usual proviso in regard to the lowest or any tender. There is no hint of any desire for suggestions looking to the best effects from a landscape or topographical point of view, but the purpose seems to be to simply get the boldest plan, sufficient to meet the requirements of the Registry Act, and for the lowest possible sum of money. We have in our mind a case where the promoters of a summer resort for economical reasons instructed their surveyor to lay out the grounds and avenues in square blocks, in spite of the fact that the topography of the site suggested an infinite variety of winding roads with gentle inclination, giving vistas of lovely bits of landscape and interesting glimpses of land and water. But the almighty dollar prevailed, and all suggestions of artistic treatment were brushed aside. There is a large field for educational advancement amongst our people in these matters.

THE construction of a belt line railway around three sides of the city of Toronto, has been under way for several months past, and will soon be an accomplished fact. The completion of this road should be greeted with satisfaction by the workingmen of the city. By its means they will be enabled to live in pleasant surroundings in the suburbs, instead of in the undesirable locations in which they are now placed by lack of ability to pay high rentals consequent upon the value of land in desirable localities in the central parts of the city. Of late years the scarcity of houses obtainable at a moderate rental, and the lack of means of rapid transit to the outlying districts, has been very much felt by the working classes. The latter provision will soon be found in the belt line, and instead of living in a tenement house flat as he would soon have to do, the laborer and artisan with their families may enjoy pure air, and if so inclined, may easily become the owners of a piece of land and a comfortable dwelling. Those architects who have been working for nothing in the various competitions of the last two years, might better have exercised their philanthropy by preparing a series of well-planned workingmen's houses, especially designed to improve the health and happiness of the working classes.

ONE of the most important improvements which Toronto and the general travelling public may look forward to with pleasureable anticipation is the proposed new Union Station, which will probably be ready for use some time in the year 1893. The present structure, although extensive, is little better than a way station. Travellers and loungers jostle each other on a platform common to all, while some trains cannot be reached without crossing tracks or even climbing over the platforms of intervening cars to the imminent risk of life or limb should they suddenly begin to move. The platform on the Grand Trunk side cannot be reached without crossing at least three tracks, which are seldom free of stationary or moving trains. It is proposed to make the new station a terminal one—that is, one without tracks passing through it. Trains for the east will back in from the east, and those for the west, from the west. This is accomplished in an ingenious manner. The central building, or station proper, is to be projected through or across the tracks, as it were cutting them in two. Through trains will pass to the southward on special tracks. In the main building a large central waiting room or hall will give access through doors and gates on either side to the platform of the particular train desired, so that even the most uninitiated need make no mistake as to the proper train to take. The trains will stand in the open air, while the platforms will be covered with "umbrella" sheds, a much cleaner arrangement than that of the present smoke begrimed edifice. The various retiring rooms, baggage rooms, &c., are planned with regard to the latest ideas, and as the central building is to be several stories in height, the opportunity is presented of erecting a building of commanding proportions and good design, which it is to be hoped the railways will not fail to profit by.

A CORRESPONDENT in a late number of the *Week* signing herself "Housekeeper" has made some very practical comments on the lack of suitable planning displayed in the typical workingman's house which is rented for ten or twelve dollars per month. She complains in the first case that as a rule the rents are too high for the average workman's income, about one-fourth of which is sunk in providing shelter for himself and his family. In former times the workman had a cottage not too far from his work. This cottage had a small parlor and a large apartment which was living room and kitchen combined—a desideratum where the housewife has to combine in herself all the functions of cook, nurse, seamstress and housekeeper. The cottage has given place to the pretentious row, or the semi-detached house, with rent far beyond the means of the mechanic, and he has had to move to the outskirts, near the terminus of a street car line, where acres on acres and rows on rows of rough cast houses with brick veneered fronts have been put up for his accommodation. These houses contain on the ground floor a kitchen and two rooms, practically double parlors, each being considerably larger than the kitchen. The kitchen is a cramped, narrow room, depending for its light and air upon a narrow space between it and the adjoining kitchen. It has little or no pantry accommodation; a narrow cupboard about the depth of a good sized plate has to contain the crockery, the food cooked and uncooked; and most likely this cupboard is in close proximity to the stove. Here the family eats, and here the washing and ironing is done. The cellar usually consists of one compartment containing furnace, coals and ashes, and quite unfit for the cleanly storage of food.

"Housekeeper" maintains that one moderate sized parlor is sufficient—a room which may be pretty and pleasant, where the man and wife can retire after the work is over and the children in bed, and where they can receive their friends free from the presence of their more common-place surroundings. Then she would have the kitchen a large, roomy apartment, the common family room, with space for two tables and two windows. The abolition of the second parlor would permit of a roomy pantry, lighted and ventilated, and a good wardrobe or clothes closet. Opening off the kitchen, "Housekeeper" would have the summer kitchen, where the hot stove could be placed in the summer months, and tubs, pots and pans all the year round. She says: "Such a ground floor for his house could not fail to win the approbation of the workingman and his wife by reason of the comforts arising from the ordered arrangement of the household thus rendered possible, and surely commends itself to the judgment of the landlord and the architect. The cost of such arrangement would not be one cent more than that of the present ill-adapted house to its users as a home, and therefore no objections could be made on that score."

"Housekeeper" either forgets or does not know that an architect is seldom or never employed to plan houses of the class to which she refers. The speculative builder has been abroad in the land these ten or fifteen years, and to his genius must be credited the apologies for houses which disfigure so many miles of our streets. We would commend the suggestions of this very practical woman to the aforesaid builders, and would counsel him to seek out some clever young architect who will embody her views in a plan which should prove popular with her sisters who must perforce spend a large portion of her working hours in the kitchen.

MORE COMPETITIONS.

THE series of "architectural competitions," by taking part in which Canadian architects are invited to "distinguish" themselves, seems far from being exhausted. Below are reprinted a couple of invitations addressed to Toronto architects during the last month:

TO ARCHITECTS AND OTHERS.

The Churchwardens of St. James' Cathedral Church are prepared to receive designs for the completion of the Organ Cases. Information as to general character of work proposed and cost of same can be obtained from the Vestry Clerk at the school house.

INDUSTRIAL SCHOOLS' ASSOCIATION.
GENERAL SECRETARY'S OFFICE,
32 CHURCH ST., TORONTO, May 19th, 1891.

DEAR SIR,—As you have perhaps heard, the Industrial Schools' Association intends erecting, during the present summer, at East Toronto, the first buildings for the Alexandria Girls' School, at an expense of about $20,000. It has been indicated to us that, if requested, the city architects might make a contribution of their services in planning and superintending the construction of these buildings; and in view of this, the Board of Management, instead of asking any one specifically, have thought it only just to give all an opportunity to present designs in accordance with the enclosed general specifications. If you wish to aid us in this way, we shall be glad if you will send in to the address of the General Secretary, Board Room, 32 Church street, on or before June 10th such sketches as you may think suitable, showing elevation and arrangement.

The authors of the plans chosen, will, of course, have the superintendence of the work, and will be entitled to preference for future work.

Yours very truly,
CAMILLA B. SANDERSON,
Gen. Sec'y.

Two features are becoming more and more noticeable in these competitions, viz., a growing disposition on the part of corporations and individuals to obtain the ideas of architects without paying for them, and to adopt the competition scheme for the accomplishment of this object in works of small cost as well as those of more importance. In other words, the competition business is going from bad to worse. The cool assurance with which it is assumed that architects are ready to snap at any chance of securing employment, regardless of whether the competitions they are asked to enter are subject to any of the conditions which should properly govern them, seems to clearly indicate the status to which the profession has been degraded in the eyes of the public by the conduct of a portion of its members.

It will be observed that in neither of the above invitations is given the name of a competent person appointed to pronounce judgment upon the work of the competitors, nor is the slightest reference made to the all important question of the method to be adopted for determining the merits of the designs to be submitted. The architect is expected to take a leap in the dark.

The action of the vestry of St. James Cathedral, besides being a direct insult to the architects who successfully carried out the recent improvements in the interior of the edifice, must prove to be extremely short-sighted from the standpoint of the church's interest. The designing of an organ case in such a position is admittedly a difficult undertaking, requiring special skill. The number of architects who could perform the work satisfactorily is extremely limited, and it may safely be asserted that not one of them will respond to the vestry's invitation. The churchwardens might better have accepted the design which is understood to have been prepared by the architects who carried out the other improvements, and of whose services they have deprived themselves by their discourtcousy.

We are led to wonder by whom it was indicated to the Industrial School Association that "the city architects might make a contribution of their services in planning and superintending the construction of these buildings." Was not the "indicator" located in the fertile brain of the author of the above letter or some other promoter of the enterprise? To an outsider, the "indications" seem to point that way.

Notice how the Association dilates upon its sense of justice in giving "all an opportunity to present designs," instead of "asking any one specifically." What consideration is here displayed for those architects who might have felt themselves slighted had the opportunity not been given them to do the work for nothing! How singular that this feeling of consideration did not prompt the officers of the Association to suggest something in the way of remuneration for the purpose of assisting the architects to maintain an existence. True there is the statement at the close of the letter that the "authors of the plans chosen will, of course, have the superintendence of the work, and will be entitled to preference for future work." It is difficult to decide, however, what dependence to place on this, in view of the statement previously made that it was thought the architects might make a *contribution* of their services in planning and superintending the construction of the buildings.

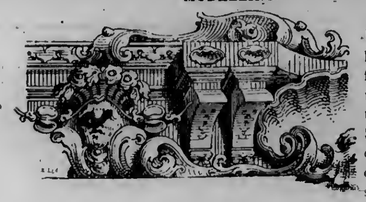
It is cause for indignation to the architect who knows what is due to his profession, that such indignity should be heaped upon it. On the shoulders of men in the profession must be placed the responsibility for the present condition of affairs. In their desire to gain prominence and a temporary advantage, they have disregarded and brought into disrespect the ethics of a noble profession. As a result, the public has come to place an exceedingly low estimate upon the value of an architect's services. Every man who practices the profession must in consequence suffer to a greater or less degree, until a feeling of deeper self-respect takes possession of the class of members of which we have spoken.

It was the hope of many that the formation of the Ontario and Quebec Associations of Architects would tend to greater *esprit du corps* within the profession. That to some extent at least this hope has been disappointed, is shown by the manner in which members of both Associations have entered competitions contrary to the well-founded advice of the Executive Councils. The leniency of the treatment accorded to persons who have thus acted in violation of the wishes of the Associations and lowered the standard of public estimation for the entire profession, is well calculated to promote rather than curtail the evil. The severe example made of offenders of this class by the legal and medical societies is what secures for them public respect.

The public should not be censured for endeavoring to get its architectural work done for nothing. If every architect will honorably abide by what is known to be the tariff approved by the Architectural Associations and give the cold shoulder to every competition the terms of which do not commend themselves to the executive officers of these Associations, the profession will speedily rise to a higher plane.

Stone newly fractured should present a bright, clean appearance, with grains well cemented together. A rough test to prove whether a stone is likely to stand in the smoky atmosphere of towns is to soak it for a few days in dilute solution, containing one per cent. of sulphuric acid and hydrochloric acid.

"MODELLING."



Mr. M. J. Hynes, who lectured before the Toronto Architectural Sketch Club on the close of the season's work, took for his subject "Modelling," classifying modelling under three heads:—first, modelling which is art, second, modelling which is unworthy of the name of art, and which for want of a better name is called "Romanesque," and third, the modelling of character.

He dwelt for some time on the Romanesque of the undiscovered periods which had been developed in America by Richardson, and regretted that the architects of Canada had not seen fit to deal with the natural foliage of their country, or to take up the Renaissance of the modern Italian treatment. On the third part he was sarcastic, without being personal, on the architects of the city, showing forth the advisability of the members of the Sketch Club developing the high standard of character which should belong to the profession.

In taking up the arts, Mr. Hynes undertook to criticise Michael Angelo's "Moses," the placing of the arms on Venus de Medici, and the hands and arms of Venus de Milo, and presuming that the practical portion would be interesting to the students of the profession, undertook to illustrate how these great works of art were reproduced from clay models. He also treated and illustrated the method by which the chains in marble were placed upon the Greek slave, and how the classic bronzes were reproduced in the present day. He dwelt for a considerable time on the mistakes we make in our details. His blackboard illustrations were crude, yet pointed. He reproduced, for example, some illusions, by which a matrix showed in bold relief, deceiving the eye of the most critical.

Mr. Hynes finished his remarks by reproducing a rough sketch in clay of the late Sheriff Jarvis, an esteemed friend of his, and uncle of one of the architects present. Mr. Hynes stated that Mr. Frank Darling had presented the Sketch Club with the original models of the ornament for the improvements in the Dominion Bank, together with some of the lecturer's own work.

TORONTO ARCHITECTURAL SKETCH CLUB.

On Saturday afternoon, April 18th, a large number of the members met at the Victoria Hospital for Sick Children, and were kindly shown over it by Mr. S. C. Curry, who explained everything in detail and took great care to point out the various purposes of the building, making in this way the visit very profitable.

The members then proceeded to the School of Practical Science, where Professors Wright and Galbraith courteously conducted them through the building. The testing machine proved extremely interesting, and some little time was consumed in listening to a description of the various uses to which the machine could be put. The fine collection of architectural photographs and specimens of students' work were then examined.

During the course of the afternoon a photograph was taken of all present by Mr. C. J. Gibson, who intends presenting to the Club an enlarged copy. This is not the first time that Mr. Gibson's camera has been the means of making the Club indebted to him, as he made a present some time ago of several good specimens of his work, mounted and framed.

The competitive designs for a "Staircase in Wood" were on exhibition on Monday evening, April 27th, and as the critic, Mr. Frank Darling, was unable to be present, on his suggestion each member gave a short criticism of the drawings from his own individual point of view, thus bringing out a variety of ideas. The drawing by Mr. Murray A. White was unanimously awarded first place.

At the close Mr. S. G. Curry made some practical remarks on staircases in general.

The last regular meeting of this season was held on May 18th, when Mr. M. J. Hynes gave a talk on "Modelling," to illustrate which he had sent some clay and necessary tools to the Club rooms, and in a practical way elucidated the mysteries of his subject. A synopsis of this talk is given in another column.

There will be a social gathering of the Club at the Toronto Art Gallery on Thursday, June 25th, and it is hoped that all friends and members of the Club will be present.

QUERIES AND ANSWERS.

Montreal, May 21, 1891.

Editor Canadian Architect and Builder.

Dear Sir,—Would you kindly inform us of some preparations for coloring a Toronto pressed brick front built last fall, the plastering having been done during the winter. The mortar is a dark blue, and it is almost impossible to rub it off the bricks. By enlightening us on this subject, you will greatly oblige.

Yours truly,

J. Brunet & Son.

[It would be a pity to attempt to color pressed brick as suggested by our correspondent. The method adopted by bricklayers in Toronto for removing plaster stains on brickwork is as follows: First scrub thoroughly with water and brush, then wash with muriatic acid, using a whitewash brush; then scrub again with water and brush. The acid may be used in proportion of a half pint or a pint to a pail of water. If the set dressings are of Portage Entry stone, it will be necessary to carefully avoid letting the acid touch it. Credit Valley stone is uninjured by contact with the acid.—Ed. C. A. & B.]

Stanstead, Que., May 16, 1891.

Editor Canadian Architect and Builder.

Dear Sir,—I wish you would make your "Hand-Book" larger and better, giving a basis for a contractor to work from in all branches of building. For example, the time required to lay 1 M. brick 4", 8", 12" and 16" wall and a veneered wall, also examples of circular towers, arches, buttresses, and illustrate and show how height affects the time required (I use 15' for base, add 1-5th for every 5 feet); time required to frame and put up 1,000 scantlings, with several varying cases illustrated.

I think a book of this kind would sell. I would be glad, if got up on correct reasonings, to pay $5 or even $10 for one.

Yours truly,

B. F. Kezar.

[It would be a difficult and expensive matter to prepare a hand-book in the manner suggested by our correspondent which would be universally applicable. The rate of wages and value of materials vary so considerably in different localities that the information would be suitable for a limited number of localities only, unless elaborately gone into. The expense of preparing such a book in Canada would not be warranted by the prospective returns which might be looked for even by the most sanguine publisher.—Ed. C. A. & B.]

Montreal, June 15th, 1891.

Editor Canadian Architect and Builder.

Dear Sir,—According to the resolution which was unanimously adopted at the annual meeting of the Province of Quebec Association of Architects, held in Montreal on the 10th and 11th of October, 1890, was it not decided to use the columns of the Contract Record when calling for tenders? How is it then that so few Montreal architects comply with the above resolution, although many contracts are being let out?

Yours truly,

Contractor.

[Such a resolution as our correspondent mentions was unanimously passed by the Quebec Association. We are not in a position to give the reasons which may prompt individual members of the Association to ignore the fulfilment of their promise. —Ed. C. A. & B.]

We are in receipt of a new catalogue just issued by the Toronto Radiator Co. The cover is of black cardboard with the name and address of the Company embossed thereon in copper and silver. An antique and artistic appearance has thus been gained, and one which marks a departure from previous publications of this character. This catalogue is distinctive also from the fact that it is the first published in Canada, and the second in America, devoted exclusively to radiators. It contains 66 pages, in which are presented on fine plate paper handsome illustrations of the various sizes and styles of radiators manufactured by the Company, tables of prices, and a large amount of other data relating to the same.

OUR ILLUSTRATIONS.

PHOTOGRAVURE PLATE, BANK OF MONTREAL, TORONTO.—DARLING & CURRY, ARCHITECTS, TORONTO.

ACCEPTED DESIGN FOR NEW BOARD OF TRADE BUILDING, MONTREAL, QUE.—SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS, BOSTON, MASS.

PLASTER DETAILS, DOMINION BANK CEILING, TORONTO, (EXECUTED BY HYNES TERRA COTTA CO.)—DARLING, CURRY, SPROATT & PEARSON, ARCHITECTS, TORONTO.

HOUSE ON SUSSEX AVENUE, TORONTO.—E. B. JARVIS, ARCHITECT, TORONTO.

THE MEANING OF ARCHITECTS' CERTIFICATES.

Hamilton, May 5, 1891.

Editor Canadian Architect and Builder.

Sir,—In looking over your April edition, I notice report of a discussion which took place at the meeting of the Ontario Association of Architects, which meeting I was unable to be present at. It would appear that some of the profession favored the idea that when an architect issued a certificate he should assume the whole responsibility the issue of that certificate implied. Are we to assume from that, the issue of a progress certificate means the work has been passed upon and accepted by the architect, or is it to mean just what the certificate implies? I have been using both in Canada and the United States, and I take the liberty of sending you a copy of form and stub. This certificate I have found to give entire satisfaction to all parties concerned, and I think will cover the point in discussion.

Yours truly,

Jos. Powell.

The form of certificate referred to by Mr. Powell reads as follows:

This Certificate is given to show that..... , Contractor (or Workman), has performed labor to the value of $..... and delivered material to the value of $....., upon the Contract for ..... according to Plan marked..... on ..... Street, in the..... of..... County of..... , Province of..... This estimate is made equitable, in so far as it is possible to judge of work in its present incomplete condition. The Proprietor may therefore advance $..... in accordance with the conditions of Contract for said work (this Certificate in nowise varies conditions contained in Contract), as to the acceptance of work or completion of Contract.

Dated this..... day of....., in the year 189..

Overseer's Signature.

.....

STRUCTURAL IRONWORK.

By George H. Blagrove.

Metal supports present themselves to the mind of the modern architect as being of cast iron, wrought iron, or steel. If he has to choose between cast and wrought iron, he will probably select the former, if there are great dead loads to be carried, and the latter if there is likely to be much vibration. With a series of superimposed columns in a building of several storeys, it becomes a question what is the true proportion of the diameter to the height; for unless the columns are effectually steadied at their junctures by means of cross girders, the whole series is more like one column than several. It is well known that when a column or stanchion exceeds twenty-five diameters in height, wrought columns are preferable to cast ones of the same sectional area; and at forty diameters high we can get the same strength with twenty-five per cent. less metal. Against this advantage the architect has to set the fact that the labor involved in constructing the rivetted columns involves an increase of from twenty to thirty-five per cent. over the cost of cast supports. When we come to employ rivetted columns, we are led to consider the advisability of substituting steel for wrought iron, if the loads to be carried are very considerable, and especially in cases where a close economy of lighting space is essential, as, for example, in the fronts of business premises. By the use of steel, not hardened, we can obtain about ten per cent. more strength than by employing wrought iron, but with some fifteen or twenty per cent. additional cost. Strength for strength, therefore, the additional cost involved will probably not exceed ten per cent. But by using hardened steel, of mean temper, we can obtain an increase of strength over wrought iron of something like 250 per cent. We have not yet commenced using steel stanchions as extensively as we might.

Whether dealing with cast iron, wrought iron, or steel supports, the modern architect prefers symmetrical sections for his columns and stanchions. He avoids having narrow stanchions of E section where he possibly can, because he knows that these are liable to become bowed in cooling. He knows, also, that supports of any material will deflect in the direction of their least diameter; and therefore where he has to use unsymmetrical or narrow sections, he prefers enclosing them with brickwork or concrete if he can.

In the use of rivetted girders, the attention of architects is often directed to the advantages attaching to the use of steel. The practical architect, however familiar with the materials at his disposal, is not misled into designing steel girders of precisely the same section as those of wrought iron. He knows that, other things being equal, a steel rivetted girder will safely carry about forty per cent. more than one of wrought iron; but he also knows that the elasticity of the two materials is about the same. He therefore avoids assuming a proportionate limit of deflection in calculating the load upon a steel girder. Strength for strength, a steel girder will contain about one-third less metal than one of wrought iron; and if the depth be the same, the deflection will be the same; but the depth of the steel girder must not be reduced, unless we are reconciled to an increase of deflection.

The bedding of iron or steel supports and girders obliges us to take intimate cognizance of the other materials with which the metal is brought into contact. The superficial area covered by the base-plate of a column or stanchion is designed by the architect to be of sufficient extent to avoid the slightest danger of cracking the bedstone beneath. If the column be loaded to the extent of three tons per superficial inch of sectional area, the architect will probably make the nett area of the base-plate about eighteen times the sectional area of the column, supposing the base-plate to be of Yorkshire stone. With a bedstone of Craigleith or Bramley Fall, he would probably consider a proportion of sixteen to one ample for safety; but he would not go much below this limit, whatever the conditions of load might be, because he would naturally wish to impart steadiness to his columns by spreading them well at the base. In the case of a steel stanchion, loaded to the extent of eight tons per inch of sectional area, many architects would employ a bedstone of Aberdeen granite, and whether the steel stanchion were provided with a cast iron base or not, they would not think it necessary to give the base-plate a larger area than sixteen times the section of the stanchion.

Most persons are particular—and rightly so—about having all cap and base-plates perfectly even and smooth. They know the danger of uneven bearings, and insist upon all cast bearing surfaces being turned. Packing with felt between bearing surfaces has often been resorted to for the purpose of equalizing the pressure when the iron is slightly irregular. Many persons, however, regard such devices with a suspicious eye, pointing out that felt packing is useless, except under very slight pressures. The felt, they say, is squeezed into greater density at certain points where there are prominences upon the surface of the iron, while at other parts, where it is desirable to distribute the pressure, the felt retains its normal density and is practically inoperative. They argue that sheet lead is preferable, because it adapts itself, under pressure, to the irregularities of the iron without changing its density in any part. There cannot, indeed, be any doubt that lead is efficacious in neutralizing the effect of vibrations, for which purpose its use may be recommended even when there are no irregularities of surface in the iron. Lead also possesses this obvious advantage over felt, that it is not subject to decay.

Various opinions prevail as to how the base-plates of metal columns and stanchions should be fixed to the bedstones beneath. The old plan of having lugs formed upon cast base-plates has been pretty generally abandoned. The lugs are apt to break off, and at best they are of little use to steady a column; they can but prevent it from slipping laterally. In bolting a base-plate to a bedstone, some architects insist upon having bolt-holes drilled or jumped through the whole depth of the stone, so that the heads of the bolts may be on the underside. They are not satisfied with the usual practice of sinking lewis-holes in the stone for the reception of lewis-bolts which are run in with lead. They maintain that the lewis-bolts are liable to be loosened if there is the slightest tendency to oscillation in the columns or stanchions, and that if bolts are necessary at all, they are required not so much to resist tensile strain as to ensure closeness of grip. There are others who contend that broad base-plates under heavy columns are sufficient to ensure steadiness without the aid of bolts, and they recommend forming a square sinking in the bedstone to receive the base-plate and prevent all possibility of lateral displacement. Whether bolts are employed or not, there are two advantages in sinking the bedstone. In the first place, the depth of the sinking can be regulated so as to allow a little play in the height of the column. This is desirable when the ironwork is not delivered upon the site until a portion of the building is up, and stone templates have been laid ready to receive the ends of girders which take their bearing also upon the iron supports. Another advantage in sinking the bedstones is that the sunk portion alone requires to be worked even and true; the remaining portion of the upper surface need not be worked at all. This serves to economize labor when large bedstones of granite are used.

Some difference in practice prevails as to the bedding of girders. Many architects object to countersunk rivets being used at those portions of a girder where it takes its bearing upon a stone template, objecting to the sacrifice of strength in the countersink. They insist upon spherical-headed rivets being used, the stone being countersunk to receive them. Others, wishing to save the labor involved in countersinking the stone, have the end of the girder bedded in Portland cement, which expands slightly in setting, and ensures an equality of pressure between the girder and the stone. The practical architect, however, knows the time that must elapse before Portland cement can attain its full strength, and, although he does not wait long enough for it to do this, he will probably allow for a month's setting before subjecting the cement to the full pressure which it is required to sustain permanently. In the meantime he will will either postpone completely loading his girder, or, more probably, he will have it shored up. The rapidity with which modern buildings are run up generally makes it imperative to load a girder almost as soon as it is fixed. The architect is not afraid to trust the strength of Portland cement when properly set, knowing that it will resist compression as well as most sandstones. If he wishes to sustain a pressure greater than granite will bear, he will have recourse to cast-iron honey-comb bed-plates, which will distribute the pressure over a larger surface of stone than the end of a girder will cover.

In scheming structural ironwork, we may be led to consider how far vertical supports can be made available for relieving the external walls of a building from the thrust exerted by the roof.—*Specialities.*

MOULDINGS.

MR. Gambier-Bousfield's paper on "Mouldings," read before the Toronto Architectural Club last November, was, as we have previously remarked, illustrated by a number of diagrams and sketches, but without reproducing these—which, being very complete, were a lecture in themselves—the paper printed here in its entirety would not be so easily understood. The following is, however, an outline of the paper:

Although students in this country had not ancient examples to measure and study for themselves and were consequently unable to see the effects produced by the combinations of mould forms, in the situations for which they were originally designed, yet it is of the utmost importance that students should master the principles of mouldings, and become familiar with the characteristics of the outlines peculiar to each period of architecture. It is a mistake in speaking of the various styles or orders to consider each as separate and apart from others—styles are really inseparable; each period grew out of the one before it, and to comprehend any particular period some knowledge must be obtained of all previous periods, in order that the cause, the why and wherefore of every detail may be understood.

Every detail, whether constructional or ornamental, had its origin in actual necessity; there was no such thing as a feature being introduced originally simply for effect. The column was a constructional necessity, and its ornamental cap and base were originally mere blocks for the purpose of distributing pressure, improved into ornamental features as the art advanced. So again, if there was an opening in the wall, such as a window or a door, it was a necessity to put some projection in the wall above, that would protect the opening from the flow of water down the face of the wall, and here we find the origin of the drip or label mould, the most practical of all mouldings.

The work of an architect of to-day is that of *adaption*. It is his part to adapt old forms to present requirements, not to copy slavishly this or that feature simply because it belonged to the period of which he is designing a building, but to make use of the *principles* of that period, and adapt them to present requirements. Every moulding was originally designed with an eye to the position it was to occupy, and therefore it is a foolish thing now to design a mould that looks well beneath the eye of the designer on his board, that is intended to occupy a position say, twenty feet above his head when carried out, although this is what is constantly done.

But to turn to the forms of mouldings and notice how each grew out of another. There is the "fillet" of classic art by rounding the edge of which the "bead" is formed, sometimes raised on the surface, sometimes sunk, the "quirk" following upon the sinking of the bead, by the cutting off of the right angles of the sinking. Then there is the "torus" or enlarged bead, but used independently of the flat surface of the wall. The "cavetto" is the reverse of the "torus." Resulting from these two, the "torus" and "cavetto," is the combination of the "cyma recta," the half torus forming the lower, while the whole "cavetto" makes the upper portion. The "cyma reversa" is as its name implies, the reverse of the "cyma recta." The "cyma recta" is more generally known and spoken of as the "ogee." Then there is the graceful "ovolo," one of the most beautiful of Greek curves, the small abrupt quarter-circle at the top and the long gentle curve below. The Romans deprived this mould form of its beauty in their adaptation of it—as they did every feature they made use of—and their ovolos were little better than a great quarter-circle. The "scotia," another beautiful Greek line, is the ovolo reversed. These forms in construction variously arranged, and more or less modified, continue in use through all periods of architecture.

Students must remember at the outset the order of the various periods. First, the Classic, or more properly the Greek; then the Roman—a debased classic; after that the Romanesque, an adaption of classic to the requirements of the Christian era, a modification and pure use of classic forms, influenced by the Italian climate and the character of the Italians, as well as by the necessities of the Christian religion and its forms of worship.

Next followed a break when the art made little progress for nearly 300 years, until under Charlemagne at the end of the eighth century we find the art once more revived, but in a new form; the Romanesque has passed away, and the Latin or Norman, or round arch Gothic is being developed. The general plan and outline of the buildings is much the same, but the details are entirely different. Compare the classic constructions with those of the Gothic. In the classic you see occasional curves introduced between wide plain surfaces; rectangular members horizontally disposed seems to be the rule. In the Gothic plain surfaces are suppressed, and the general flow of line is vertical rather than horizontal. You will see how similar are the Norman mould forms to the classic; they consist of beads, fillets, and hollows intermixed with splays.

Early English mould forms consist of the "roll" or "bowtell," the "pointed roll," and the "roll and fillet," and combined with deep hollows, they form the details of the mouldings. When we find distinct additions to these, we draw the line and say another period is commenced, and this we call the Decorated, but we cannot close our eyes to the fact that the additional forms and combinations have been gradually developed from the others, and the period of their development we call "Transition"; so that while the form called the "scroll" is found occasionally in late "Early English," when we find it occur with frequency we say it belongs properly to the Decorated period. Of this second period of the Pointed Gothic are the various combinations of rolls, and fillets; also the plain and hollow chamfers, whether curved or sunk, but towards the end of the second period a very decided change of form is to be noticed; the hollows are getting more shallow, the curves more exactly parts of circles, so that another name for this period is the Geometric period. The rolls are flatter, the chamfers more general, until at last we get to a time when the mouldings are drawn in a "save trouble" fashion. They have become very flat and shallow; the members are extended, so that a single member will cover a surface which a few years before would have been divided into a dozen or more members. To this period—the Perpendicular—belong the "casement," or the sunk chamfer or hollow, widened and flattened out; rolls, often applied like shafts, but without caps or bases; the bracket or double ogee, shows as having been noticed towards the end of the Decorated period. The early form of the casement was simply a widened hollow; there are the "fillets" at each end dividing it from the "rolls," but here the "fillet" is omitted, and the casement is found ending on one side with a "roll" of very slight projection, beyond which, instead of a decent hollow that would throw up the roll, and give a contrast of shade, is the ogee, the roll or outward curve of which touches the roll so that there is neither depth nor shadow. Like other forms, the ogee has not escaped the flattening influence, and we constantly find the bracket (two ogees abutting) made use of, sometimes with a bead between, sometimes in combination with other members.

So much for mould forms. Now the evolutions of these must be noticed. There is the Greek ogee, pure and simple, and its form when with bolder treatment the curves are drawn to almost the half circle, and "quirks" are introduced to connect the ends of these full curves with the flat surfaces beyond them. There is the Early English ogee, which gives us at once the "roll," to which is added the "bead," forming "the roll and bead" mould or the "roll and under cut bead." Then a *point* is left at the angle of the stone, out of which the "roll" has been cut. This point is next seen blunted. The blunted point being a "fillet," while the "roll" has become wider, and is now struck from two centres instead of one, the junction of the curves being covered by a fillet. The "fillet" introduced here to cover the junction of these curves, it was a next step to put it between the other curves to separate the "roll" from its "hollow," and so we arrive at the "roll and triple fillet."

The enrichments of mouldings were next shown to follow the characteristics of each period, examples being shown in the diagrams. The application of these principles of mouldings to buildings for the Canadian climate was next touched upon, and it was shown how unsuitable were such forms as the hollows of Early English base moulds in which water will lie in the severe winters, and therefore what folly it is to introduce such forms simply because they are Early English. Examples of mouldings on recently erected buildings in Toronto where then shown, from which a good lesson could be learned concerning the errors designers of mouldings are likely to fall into when the principles of mouldings are not attended to.

DECORATION AND FURNITURE

THE ONTARIO SOCIETY OF ARTISTS.

WE have heard rather more than usual this year of the exhibition of pictures by the Ontario Society of Artists. The pictures have been well praised in the daily papers, after the manner of the daily papers; and the soirées given by the Society in the Gallery have brought it into additional prominence. It must not be forgotten, however, that no kind of prominence except that of excellence, and no kind of criticism except that which is sincere, will permanently help the Society to take the leading position in Canadian art which one would naturally expect from it.

It is sometimes questioned whether Art can expect to prosper in so young a country, where men are more concerned with the practical than with the aesthetic side of life, and where wealth is not so common that there are many men who can afford the luxury of hanging a painting upon their walls where a "good engraving" will do. As far as the question of wealth is concerned, it is perhaps valid for an architect to point to the small cost of his building as the cause of its poverty in design. Size and material are principal elements in noble architecture, and given these, the architect is better equipped for fine work than he would be without them. But with the artist it is different. A masterpiece is within his reach in a piece of any size and of any degree of slightness in execution. Indeed, it is far more within his power to obtain perfection in smallness and slightness than in the most elaborate production. An amateur can often make a good sketch, but he usually makes a dismal failure of a finished drawing. So that we have a right to expect from our artists that though their canvasses be small and unimportant, they shall be as far as they go successful.

As regards the question of a National School of Art—what should be its characteristics and how far our conditions of life are suitable to its existence—those are questions much more easy to answer in the next century than now. There is happily left to us much subtlety in life, and this much use for genius that we cannot estimate ourselves nor read our own environment without its aid. When the light of a genius, or of a school of geniuses is shed upon the life and landscape of Canada, we shall perhaps be surprised to find how much poetry there is in it. All life is full of it. There is even a poetry of dullness. Is not the Dutch School full of life and dear to collectors of pictures? Yet what country so flat, and what people so essentially dull and tame in their manners and surroundings. Our field for art is incomparably better than that of the Dutch painters. The question is: Are our artists getting at the life of it as well as the Dutchmen did in their time? The feeling with which one comes away from the recent exhibition is, that the Ontario Society is not getting at the life of anything. The highest ideal the artists for the most part hold before them is a drawing master's ideal. Given a scene of any kind, the aim appears to be to reproduce it in exactly the same spirit as that which animates a camera.

Some artists whose work is so good as to be worth criticism, exhibit water colours done in a good, clean way that shows they know how to handle their materials, but, if they will allow us to say so, this is mere draughtsmanship. We want more from a scene than a bare representation as like it as it can stare, with the workmanship an endeavor to repeat as it were in the artist's materials every touch of nature in the scene before him. The camera can do this for us, and only the camera can do it completely. What we ask from an artist is to give us the result of the impression which nature makes upon him. This is the reason we value Homer Watson. In his fine oil painting (No. 74 in the exhibition) one might say that not one touch finds its counterpart in nature. He has set down the result upon the spectator of the operations of nature in the scene before him. No one can convey to us the scene, not even a camera. No paper is white enough to represent light, no color could represent shade and be transparent. The details of nature are impossible, and its movements. We cannot have the scene repeated to us so as to produce its own effect. What we want from the artist is to convey that to us. And inasmuch as the artist is more of a seer than the average man, we may hope to find more in the scene when he has brought his mind to bear upon it than we should in viewing it ourselves with unskillful, careless or uninterested eyes. Now Mr. Watson, without *copying* nature in the spirit of a drawing-master, contrives in the best way he can with his own materials to represent to us the facts that give life and beauty to the scene. We can see the fineness and flexibility of the grass, and are aware of the wind that is waving it. We trace the gradual slope of the land up to the hill, on the top of which the misty clouds are catching. We see that the clouds are moving rapidly, and also (as Mr. Watson always shows so well), that they are floating in space at a little distance above our heads and far below the upper blue. The details—the sparkling stream running away to our right, the thatched roof with its rich, soft tints, the trees throwing their branches over it, the cattle up to their bellies in the grass—are full of beauty and interest, and so selected as to give us the full spirit of the scene.

Examine close and see how all this is done. There is not a single imitative touch. Everything aims at interpretation. No camera could do this, and we may safely say no other man would do precisely the same. The scene has entered the artist's mind and he gives us the result. This is to be a poet, which one may be excused for reminding those members of the Ontario Society of Artists who have adopted the drawing master ideal, is adapted almost letter for letter from the Greek word which means "a maker." The true artist is *par excellence* a maker. It is his privilege "to throw over Nature the wedding garment or the shroud." Indeed, the poet and the artist are so much one in spirit that, in the difficulty of referring to pictures that every one knows, we may quote from the poets in illustration of the way in which a painter should inform his work with the idea of his mind. Take, for instance, the first stanza of Keats' "Saint Agnes' Eve," a poem for painters:

> "St. Agnes Eve—Ah! bitter chill it was;
> The Owl, for all his feathers, was a-cold;
> The hare limped trembling through the frozen grass,
> And silent was the flock in woolly fold;
> Numb were the beadsman's fingers while he told
> His rosary; and while his frosted breath,
> Like pious incense from a censer old,
> Seem'd taking flight for heaven without a death
> Past the Sweet Virgin's picture, while his prayer he saith."

There is a finished picture of a cold night. All speaks of the weather and the time of day. All the touches are in keeping, and the beautiful image of the beadsman's frozen breath rising as he says his prayers, is an imaginative touch in keeping with what Leigh Hunt calls the "catholic elegances" of the poem.

If a highly imaginative piece of work like this would be beyond the means of the Canadian market, let us try a quiet bit of English landscape by Tennyson:

> "Not wholly in the busy world, nor quite
> Beyond it, blooms the garden that I love.
> News from the humming city comes to it
> In sound of funeral or of marriage bells;
> And, sitting muffled in dark leaves, you hear
> The windy clanging of the minster clock;
> Although between it and the garden lies
> A league of grass, wash'd by a slow broad stream,
> That, stir'd with languid pulses of the oar,
> Waves all its lilies, and creeps on
> Barge-laden, to three arches of a bridge
> Crown'd with the minster towers."

This gives us all the facts necessary to convey to us the character and the beauty of the scene. We know the extent of the landscape, the sort of country, the time of year. We get the color with a perception of how its brightness is enhanced by the dark embowered foreground; and what can be more charming than the composition—the sluggish weedy stream, full up to the level of the flat green meadows through which it winds in perspective, ending three miles away with the lovely central motive of the three arched bridge crowned with the minster towers. This, though so complete a picture, is by no means an inventory of the scene. The details, though full, are not divergent, each adds something to the essential character and the quiet beauty of the scene. Would that the skill which some members of the Ontario Society spend in giving us colored photographs could be directed with a little more discrimination so as to affect our imagination in the same way.

There is one more word to be said about the pleasure which we receive from the mere execution of imaginative art. To return for a moment to the poets—here is a sketch by Tennyson:

> THE EAGLE.
>
> He clasps the crag with hooked hands;
> Close to the sun in lonely lands,
> Ring'd with the azure world, he stands.
> *The wrinkled sea beneath him crawls;*
> He watches from his mountain walls,
> And like a thunderbolt he falls.

Scientifically speaking, the poet has no right to apply either the word "wrinkled" or "crawled" to the sea; the sea does not crawl, and, as applied to the conformation of a wave, the word wrinkle is not a true description. But anyone who has seen the sea from a great height on a fine day, will accept this account of the appearance of things and enjoy the bold metaphor which brings it before us so exactly, putting us by these two words, without further description, in the lofty position of the eagle. In other words, the more mind is brought to bear on the study

of nature, the more the tendency is to render it in terms other than imitative, and the more pleasure we take in the rendering. This, as well as the fact that he renders with more truth and beauty than any other men the real life of a scene—the grace of foliage, the varied slopes of the ground, the brightness of light, and the transparency of shade, and gives us color and composition to delight the eye—is one great reason why we take so much pleasure in the work of Fowler. Without a word of gratitude for Fowler, a criticism of Art in Ontario would not be complete; but it is not our purpose to deal with individuals at all on this occasion; otherwise, we might praise as well as criticize. But the Society has had from the enthusiastic daily papers as much glory as it needs, and our business is to point out with a fair mind and in a public spirit, the intrinsic lack of value in most of the productions. We name no names in dispraise. We do not wish to disturb any "vested interests." But if any artist who finds in our remarks an application to himself will take the hint, we think he will find it pay; for it is worth while in conclusion to remark, in vindication of the support that the Canadian public is able and willing to give to art, that any real work of art always sells, and usually without delay.

It was gratifying to see in the small room devoted to the Architectural Sketch Club so much promising work. The Club is now well established, and we hope the membership is full; for the Club, and the association which it brings about among students, will probably be of more value to them and to the future of architecture in Ontario than can be adequately estimated now.

The effects obtained by Composite Colors, or rather by this method of staining, are much like the effect of watered silk, looking, perhaps, green in some positions, and then changing into brown or red in another light. One of the oldest of the eastern architects declared that no advance in exterior coloring equal to the introduction of exterior staining, over a decade ago on the discovery of the Creosote stains, has been made in the last fifty years. This new discovery made by the Creosote people bids fair to make as great a revolution as the original one.

Architects and builders who are not too conservative to test the merits of a new material, should read what is said in Mr. Harald M. Hansen's advertisement regarding his patent chimney topping, and should ask for specimens of the material for examination. This material is indestructible by the action of weather, being shaped for shedding off water, and manufactured from similar clay in the same manner as first-class salt-glazed sewer pipe. In the city of Chicago this topping is becoming a fixed item in architects' specifications, replacing the ordinary common brick corbelling, cornicing, etc., as well as for better work when design permits.

ARCHITECTURE IN RELATION TO HYGIENE.

THE Seventh International Congress of Hygiene and Demography is announced to take place in London, Eng., from the 10th to the 17th of August next. The meetings of Section VI, which is to consider the subject of "Architecture in Relation to Hygiene," will be held in Burlington House, Picadilly, on the 11th, 12th, 13th and 14th of August. Under the heading mentioned the Section will discuss:

1.—Laying out and Extensions of Towns, including the control of the construction of Buildings, and the reservation of open Spaces.

2.—Planning and construction of Dwelling Houses, especially Common Lodging Houses, Workmen's Dwellings and Residential Flats.

3.—Hospitals for Infectious Diseases.

4.—Constructions and Arrangements of Asylums.

5.—Sanitation of Theatres and Public Halls.

All communications relative to this Section should be addressed to Ernest Turner, Esq., 246 Regent street W.

TORONTO HEALTH DEPARTMENT.

FOR several years past the Medical Health Department of the city of Toronto has been sadly lacking in efficiency. With the recent appointment of Dr. Allen as its executive officer, an improved order of things seems to have commenced. Dr. Allen has already shown by his energetic manner of attacking abuses that he does not regard in the light of a sinecure the important position which he has been called upon to occupy. The citizens have reason to be thankful to him for his recent report on the quality of the milk supply. As the result of investigation he finds that only ten out of one hundred and fifty samples examined during the month of May, could be classed as good. Skim milk and milk highly adulterated by various methods is being supplied by most of the dealers.

Dr. Allen has discovered also, what many persons have long suspected was the fact, that many of the so-called dairies are unworthy of the name by reason of their want of cleanliness, proper ventilation, and other important conditions requisite for insuring the purity of the milk.

Bad as is this condition of affairs, there is yet a worse phase of the subject presented in the Medical Health Officer's report, namely, that milk is being supplied to the citizens from cows so afflicted with disease as to require artificial supports to keep them on their feet.

This is truly an alarming condition of affairs and one which demands the application of prompt and severe remedies.

PERSONAL.

Mr. Haskins, City Engineer of Hamilton, Ont., was recently elected a member of the British Institute of Civil Engineers.

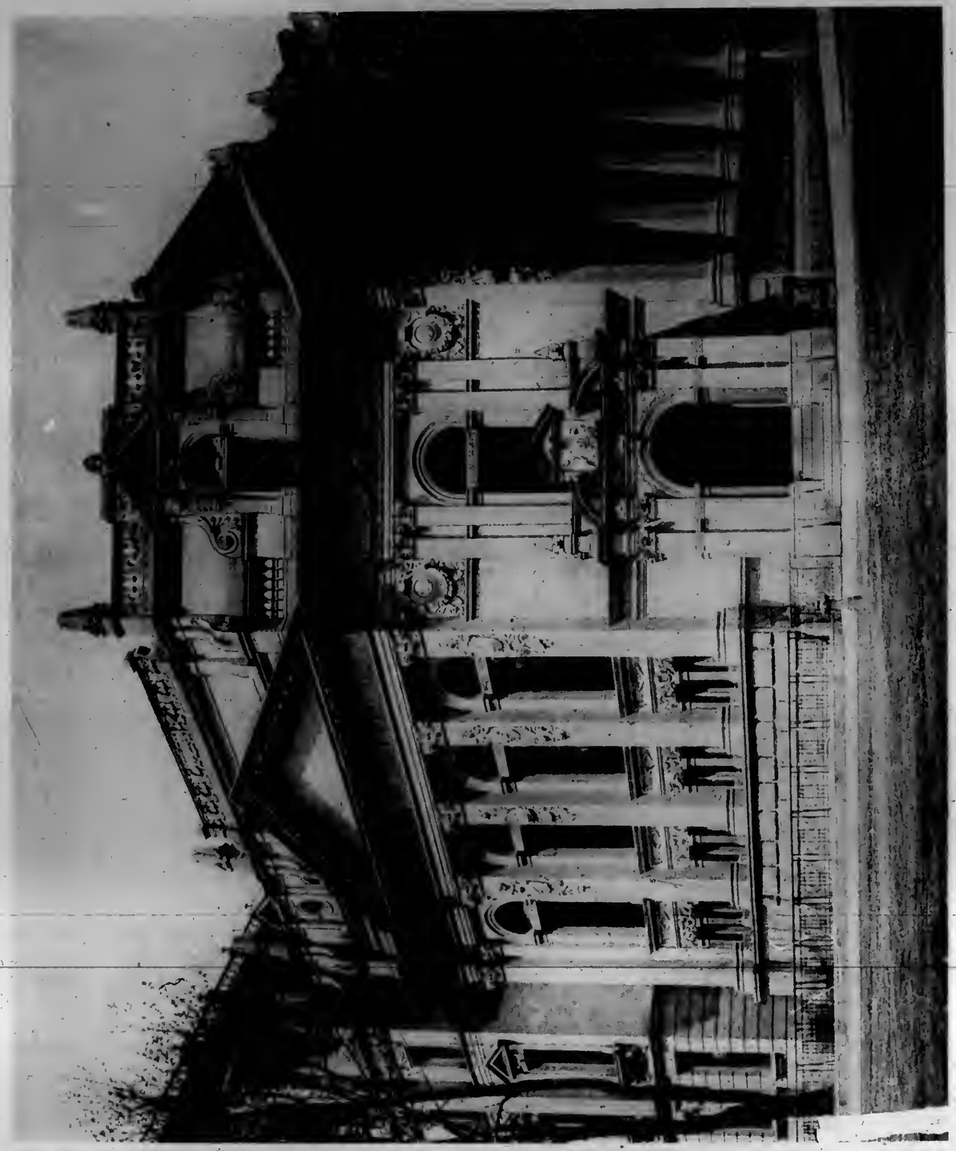
Mr. Chas. Sproatt, formerly city engineer of Toronto, has been suffering for more than a year past from ill-health. On the advice of his physicians he recently resigned his position with the city, and will endeavor to regain his physical vigor. It is the wish of his many friends that he may succeed.

Messrs. Smith & Gemmell and E. B. Jarvis form a new architectural firm in Toronto under the name of Smith, Gemmell & Jarvis. The firm are fitting up a handsome suite of offices in the Bank of Commerce building. Mr. Gemmell has lately returned from a three months visit to England, Scotland, France and Italy.

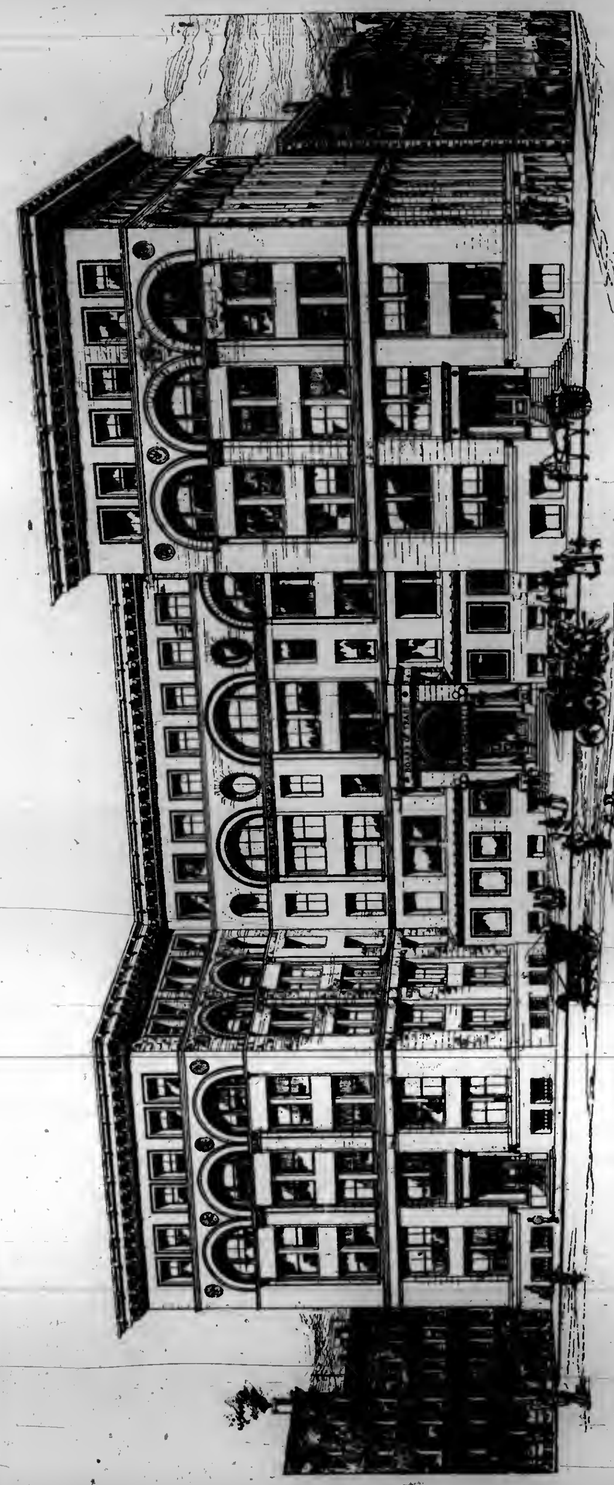
Mr. Frank Wickson, of the firm of Dick & Wickson, architects, Toronto, is receiving the congratulations of his friends in and out of the profession on his recent marriage. The CANADIAN ARCHITECT AND BUILDER extends to Mr. and Mrs. Wickson the sincere wish that their life journey may be long, peaceful and prosperous.

The presentation of a gold chain and locket, the latter suitably engraved, was the method adopted by the employees of Mr. W. B. Malcolm's plumbing supply establishment, Toronto, to mark their appreciation of Mr. W. J. Forrester, on his retirement from the position of manager to engage in business on his own account in the United States. Mr. Forrester is very popular with all who enjoy the pleasure of his acquaintance, and their best wishes will attend him in his new circumstances.

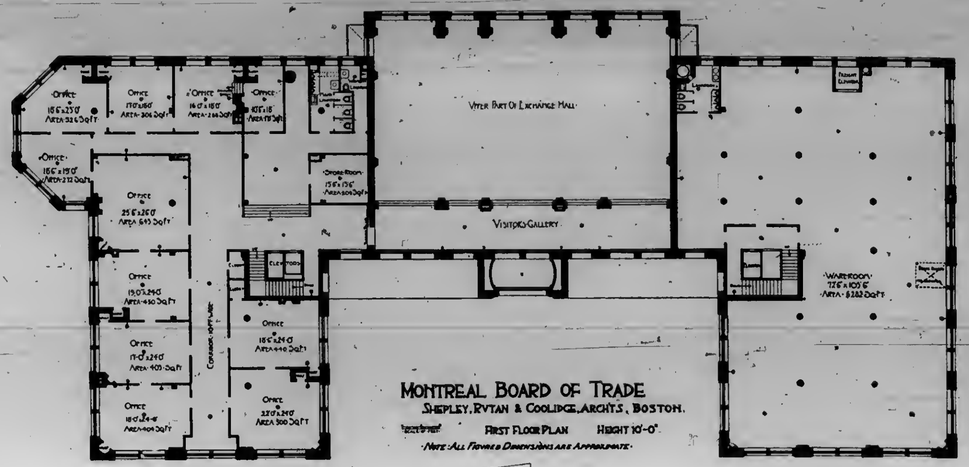
The corner stone of a new hospital building was laid at Chatham a few days ago in the presence of 10,000 people.

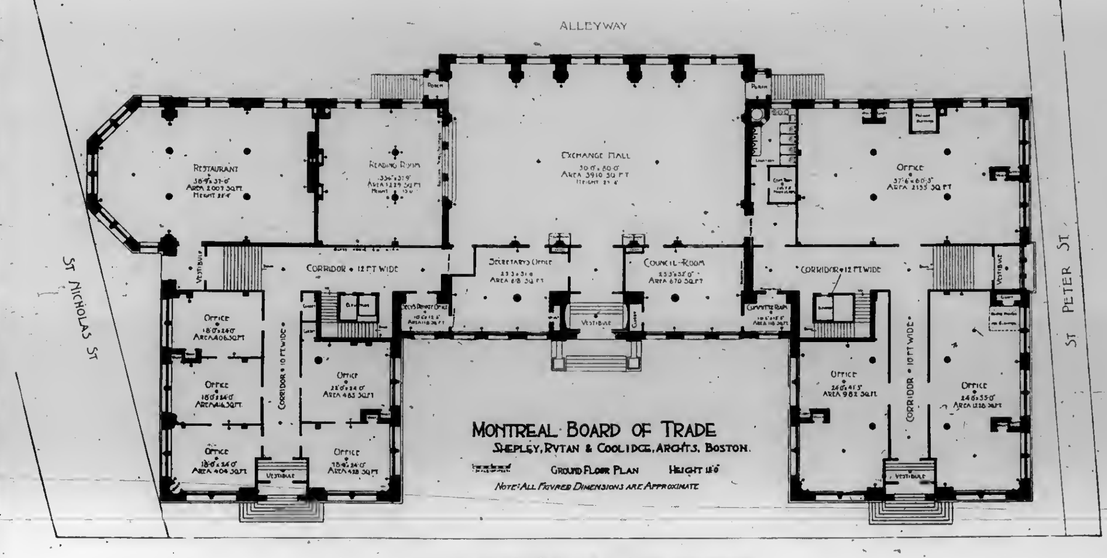


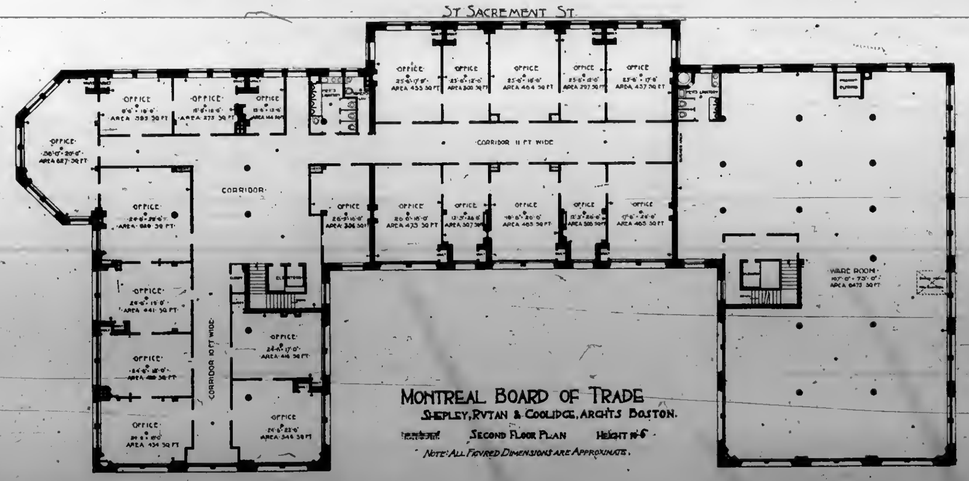
BANK OF MONTREAL, TORONTO, ONT.



ACCEPTED DESIGN FOR BOARD OF TRADE BUILDING. MONTREAL, QUE.
MESSRS. SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS, BOSTON, MASS.



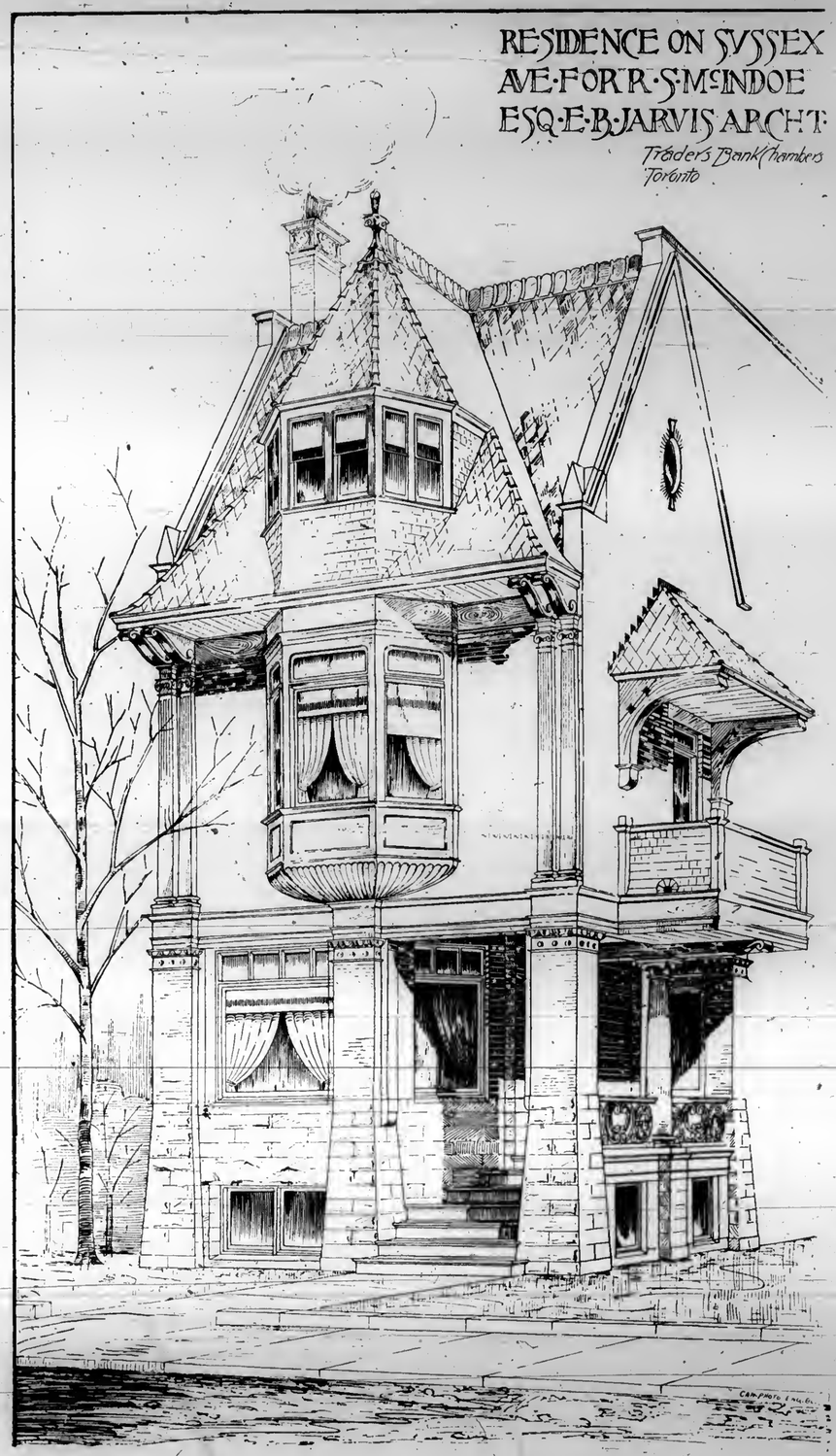




PLASTER DETAILS, DOMINION BANK CEILING, TORONTO.

(Executed by Hynes Terra Cotta Co.)

Darling, Curry, Sproatt & Pearson, Architects, Toronto.



CANADIAN ARCHITECT AND BUILDER.

VOL. IV.—No. VII. TORONTO AND MONTREAL, CANADA, JULY, 1891. PRICE 20 CENTS $2.00 PER YEAR.

—THE—

CANADIAN ARCHITECT AND BUILDER,

—A Monthly Journal of Modern Constructive Methods,

(With a Weekly Intermediate Edition—The CANADIAN CONTRACT RECORD),

PUBLISHED ON THE THIRD SATURDAY IN EACH MONTH IN THE INTEREST OF

ARCHITECTS, CIVIL AND SANITARY ENGINEERS, PLUMBERS, DECORATORS, BUILDERS, CONTRACTORS, AND MANUFACTURERS OF AND DEALERS IN BUILDING MATERIALS AND APPLIANCES.

C. H. MORTIMER, Publisher,

14 King Street West, - TORONTO, CANADA.

64 TEMPLE BUILDING, MONTREAL.

SUBSCRIPTIONS.

The CANADIAN ARCHITECT AND BUILDER will be mailed to any address in Canada or the United States for $2.00 per year. The price to subscribers in foreign countries, is $2.50. Subscriptions are payable in advance. The paper will be discontinued at expiration of term paid for, if so stipulated by the subscriber; but where no such understanding exists, will be continued until instructions to discontinue are received and all arrearages paid.

ADVERTISEMENTS.

Prices for advertising sent promptly on application. Orders for advertising should reach the office of publication not later than the 10th day of the month, and changes of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The "Canadian Architect and Builder" is the official paper of the Architectural Associations of Ontario and Quebec.

The publisher desires to ensure the regular and prompt delivery of this Journal to every subscriber, and requests that any cause of complaint in this particular be reported at once to the office of publication. Subscribers who may change their address should also give prompt notice of same, and in doing so, should give both the old and new address.

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"ARCHITECTS and the Law" is a little publication which should prove of great use to architects—of use in not only showing them what cases it would be safe to press in the way of litigation, but also what to avoid. Mr. Gambier-Bousfield has here compiled a list of cases tried in English, Canadian, French and American Courts, and while not professing to give examples of every kind of dispute which may arise in the course of an architect's practice, the ground covered is quite extensive, as the headings indicate. We commend the work to Canadian architects as a useful one for reference, and do so all the more heartily in that it has been prepared by a member of the Ontario Association.

THE Council of the Ontario Association of Architects has had printed and circulated in pamphlet form the by-laws of the Association together with a complete register of the members arranged alphabetically and also according to place of residence, and a transcript of the Ontario Architects' Act. Toronto leads off with 73 members, Ottawa following with 19, Hamilton 11, Kingston 7 and London 5, while the members in other towns total 39, making in all a membership of 154. This number includes practically all the architects in the province, a fact which should enable the Association to ask of the Ontario Government at its next session that the much-maligned word "registered" be struck out, and only properly qualified men entering the profession through the Association permitted to call themselves "Architect."

THE proceedings of the Council of the Province of Quebec Association of Architects, printed in this paper, indicate that active efforts are being made to achieve the fulfilment of the objects which the Association set out to accomplish. The numerous applications for membership on the part of architects and students are extremely gratifying, and may be taken to indicate that the organization is felt to be necessary, and the objects which it is seeking to attain such as are calculated to promote the progress and welfare of the profession. The Association is to be congratulated upon having secured suitable rooms for the exclusive use of its members. The means should be provided to render these rooms a centre of architectural interest, especially to students. The success which has attended the Toronto Architectural Sketch Club would suggest the desirability of a Montreal institution conducted on somewhat similar lines.

A LEADING lumberman in an interview with a representative of the *Canada Lumberman*, is reported to have said that the shingle mills throughout the country are working day and night owing to the strong American demand for shingles. American architects and builders are said to have discovered that tin and galvanized roofs such as they have been using of late years, do not possess the necessary weathering qualities, and that in consequence of this discovery they are reverting to the use of wooden shingles. Sixteen inch shingles are said to be in most demand, and prices are rising. We should be pleased to know what has been the experience of Canadian architects and builders with the various kinds of roofing materials. An enquiry reached us a few days ago from an architect in one of the smaller cities for information as to the merits of asbestos roofing. It was learned that in the city of Toronto asbestos is not being employed to any extent, if at all, for roofing purposes, having, it is claimed, been found to be an unsatisfactory material for the purpose.

THE necessity existing for the periodical inspection of passenger elevators, as well as hoists in warehouses, factories, etc., was referred to in these columns on a previous occasion. The rapid rate at which these contrivances are multiplying, and the probability that the serious accidents which have happened in connection with their operation in the past will increase in equal ratio in the future, renders proper supervision of them a matter of growing importance. Any provision which may be made for the protection of life in this direction, should have regard to the danger arising from elevators and hoists being placed in charge of lads and even children. There are many buildings where with a view to lessening expense a child is thus employed to do the work which should only be entrusted to an adult. The tendency to increase the speed of elevators must also result in aggravating the danger from inexperienced and careless management.

CITIZENS of Toronto may be congratulated on the outcome of the negotiations of the Council with the telephone company. The demagogues of the Council aforesaid used their utmost endeavors to have an unconditional franchise granted to an opposition company, but it is fortunate that the older and wiser heads were able to command a sufficient majority to defeat the destructive scheme. The offer of the Bell Telephone Company to pay into the City Treasurer four per cent. of their gross receipts, to materially enlarge the scope of their underground operations, to supply telephone facilities to private residences at a reduced rate, as well as offering facilities in their conduits for city wires, was an eminently fair and business-like one. It would have been a great pity to have lost all these advantages, besides burdening the business man with a double telephone service and having the streets crowded with another set of poles and wires, but that is a consummation the citizens of Toronto have only missed by a very narrow chance, thanks to the peculiar constitution of some of the gods that the people have chosen to rule over them.

WE commend to civic authorities in Canada the example set by the city of Boston which has recently established an ordinance regulating the laying out of new streets. Henceforth all new streets are to be laid out in accordance with a plan to be established by a Board of Survey, which also fixes all street lines and grades. By this means comprehensive plans may be carried out, if not all at once, yet with a definite end in view. Numerous opportunities for grand avenues and noble streets have been lost —in Toronto, for instance—for lack of this much needed supervision. One has only to look at a plan of the city in order to become disgusted by the piecemeal method which has characterized the extensions and growth of the metropolis of Ontario—streets stopping abruptly, jumping a block and then continued, streets with a jog of one-half their width, streets beginning and ending nowhere, lots having an abnormal depth and others too shallow. The by-law accepting no street under a certain width was a step in the right direction, and put a stop to a fast-growing evil. We hope the City Engineer will sharply scrutinize all new surveys with an eye to the future, and would be glad to see some such board established in Canada.

DISPUTES of all kinds have arisen in connection with building enterprises—some between architects and their clients, some between owners and contractors, others again between contractors, sub-contractors, and workmen. Thus precedents can be found in the records of the decisions of the courts, for the settlement of almost any disagreement which may arise. The city of Hamilton is at present the scene of a dispute, however, for which we find no precedent, and the termination of which, should it find its way into the courts, will be looked for with interest. The city having decided to turn the grounds heretofore used for exhibition purposes into a park, disposed of the exhibition buildings to a Mr. Walton, who employed a contractor named Scott to take them down. While engaged in doing so the workmen came upon a number of American and Canadian coins which had been placed in the corner stone of the structure at the time of its erection. These coins were appropriated by the caretaker and the workmen. Mr. Walton it appears had likewise counted upon becoming their possessor, and when the time came for a settlement with the contractor, finding they were gone, he deducted $20 as their value. The contractor protested against paying the amount, whereupon Mr. Walton reduced his claim to $10. This demand was likewise rejected, the contractor being willing to pay only 86 cents, the intrinsic value of the coins. It is said that the courts will probably be asked to adjust the dispute. There can be no question as to the ownership of the coins. This the contractor appears to recognize. The decision will turn upon their value, and the value will be likely to depend largely upon their antiquity.

THE inability of the average municipal corporation to successfully conduct a business enterprise, is receiving one more exemplification in the case of the Toronto Street Railroad. Though it has been a little over a month in the hands of the city, the receipts have shown a falling off of over a thousand dollars by the time they have reached the city treasury as compared with the same period last year, the expenses have increased fifty per cent., the cars are dirty and uncomfortable, and the state of the roadbed is simply villainous. Unless the railroad is speedily handed over to a private corporation the chances are that in a short time there will be no railroad to hand over. There have been handsome offers by a syndicate of citizens to take the property and pay the amount of the arbitrators' award and a handsome sum per year for the franchise; with an undertaking to make the change from horses to electricity within two years. Why this offer is not accepted is a mystery. Its acceptance would mean the expenditure of two millions of private funds in the work of construction. One of the largest steam and electric plants in existence would be at once installed, and a rapid and comfortable service given to the citizens. The success of the electric method of propulsion is now demonstrated beyond question, and the citizens should no longer be deprived of its advantages. The overhead method of construction would have to be employed, as nothing successful has as yet been evolved in the way of a conduit, but while properly constructed, it need not be considered a permanency, as it could be changed in the future if the development of the art ever permits of its being done. Let the Mayor and Council respect the pledge they gave the people when the funds to purchase were provided, that the city would in no case attempt to run the road, and hand it over to the company who will pay the most for the privilege, with the undertaking to provide electrical rapid transit at the earliest possible moment.

DECIDED advancement has taken place in domestic architecture in Canada, particularly in the larger cities, during the last decade. The introduction of new and improved materials has had considerable to do with the results achieved. It is possible for the architect who is the possessor of good judgment and a cultivated taste to obtain agreeable effects in his buildings at an expenditure far below what was required fifteen or twenty years ago. The variety of "ready-made" materials placed at the architect's disposal in the present day cannot, however, be regarded as an unmixed good. They tend to make him feel that he is relieved by their use from the necessity of giving that personal study and attention to the details of his building which was so important a part of his duties under former conditions. In the hands of unskilled architects many of these new materials are a positive injury. The prevailing ambition of this class of architects is to obtain novel and striking effects. The dignity resulting from breadth of treatment is entirely overlooked, as they crowd their walls with ornament until the effect resembles that of a piece of patchwork. In Toronto at least, the improvement in the character of the buildings erected for business purposes cannot be said to be keeping pace with that exhibited in the residence districts. On thoroughfares such as Spadina avenue, which are destined to be centres of business, buildings are being erected that from an architectural standpoint are an eyesore to passersby. Here may be observed façades in which carved stone, pressed and moulded brick, galvanized iron corbels and cornices are arrayed in a manner which results in ugliness so obtrusive, as to make one wish that the means were at hand for inflicting deserved punishment upon the author. When every architect shall have learned to use and not abuse, the almost endless variety of materials entering into building construction in the present day, the results attained will come nearer to being universally satisfactory.

WE publish elsewhere in this issue an abstract of a paper on "House Sanitation" by Mr. Willis Chipman, C. E., Toronto, which was prepared for the Association of Executive Health Officers of Ontario. The suggestions contained therein are more particularly applicable to small towns, villages, and the poorer districts or suburbs of cities, and the advice given is eminently practicable. The writer has shown that the poor man may be supplied with sanitary conveniences sufficient for his needs, and that cities and towns may improve their sanitary conditions without oppressing him by excessive taxation and without any great expenditure. The "Brantford plan" of earth or ash closet is recommended for localities desitute of sewerage, or where for reasons of cost or otherwise a system of plumbing is impracticable. This method should be adopted in the tenement districts of Toronto where there are more than 12,000 privy pits, and where it would be impossible to introduce water closets by reason of exposure to frost. We must confess to being rather sceptical in regard to the inoffensiveness of an ash closet which is only emptied once a month, except where the users are of exceedingly careful disposition, and fear the closet where only average care was bestowed would prove decidedly offensive in very warm weather. In Lorne Park where a similar system is in use, we understand the removal is tri-weekly for the very reason cited above. The disposal of garbage by burning in the kitchen stove is another point which it is almost impossible to observe in practice. Not one domestic in fifty will attend to it faithfully, and many careful housekeepers will not permit it, averring as a reason that it is decidedly injurious to the range. A method of cellar drainage is recommended which is incomplete in that it makes no provision for keeping the trap supplied with water in seasons when there is not sufficient subsoil water flowing to preserve its seal. A rain water pipe should be connected to this trap to prevent such a contingency. The proposal to "ventilate" the w. c. compartment of a house into the "cock loft" is a most ostrich-like proceeding. If the room cannot be ventilated into a warm flue it would be better to make it airtight and to rely for ventilation on a small window opening directly to the outer air. The pamphlet is a contribution to sanitary science which must prove of decided benefit in the direction intended, and we commend its perusal to the local authorities and health boards of the country.

TORONTO ARCHITECTURAL SKETCH CLUB.

THE season's work was brought to a close on Tuesday evening, June the 24th, by a social gathering held at the Toronto Art Gallery. The members turned out in large force and a number of visitors were present, including members of the Ontario Society of Artists and Art Students' League. Songs, recitations, ventriloquil imitations, instrumental selections, smoking and light refreshments were the means of making the evening pass very pleasantly. Those who contributed to the first part of the programme were: Messrs. L. Carlisle, J. J. Woolnough, Henry Simpson, J. A. Pearson, —— Fairweather, C. H. Westwood, J. F. Brown, E. B. Jarvis, W. Carlisle, H. D. Allardyce, R. Wilson, Sam. Jones, —— Smith, J. L. Telford, and Acton Bond.

Late in the evening the meeting broke up, after "Auld Lang Syne" and "God Save the Queen" had been sung in a hearty manner.

THE MONTREAL BOARD OF TRADE BUILDING.

Editor CANADIAN ARCHITECT AND BUILDER.

SIR,—I was pleased to see the accepted design for the Montreal Board of Trade building published in your last issue, and also to see in the same number a view of the Toronto office of the Bank of Montreal. We are thus enabled to compare the work of local men with that of foreigners and to compare it, I think, without detriment to our own men.

I must confess to a feeling of genuine disappointment when I opened the journal and found such a commonplace design as that which was accepted by the Building Committee of the Montreal Board of Trade. To me, it has not one redeeming feature. It is merely a transcript of some of the successful firm's designs for warehouse buildings which have been published frequently in the American architectural journals—lifeless—commonplace—*artless*. It is not even sound in construction, the massive front wall being carried on stilts, and the ground floor front wall advanced several feet in order to gain increased space in the offices on either side of the main entrance.

Compare the above design with that of Messrs. Darling & Curry's Montreal Bank, and there can be no question of the superiority of native talent. The one is a studied, artistic production, indicating a carefully trained mind; the other is a crude effort tossed off apparently by a man who has run short of ideas and repeats some of his old ones regardless of suitability or the artistic possibilities of the occasion.

Yours, &c., CANADIAN.

PROVINCE OF QUEBEC ASSOCIATION OF ARCHITECTS.

AT a meeting of the Council called on the 2nd of June to receive report of Committee, applications for membership, etc., there were present: J. W. Hopkins, President, in the chair; A. T. Taylor; A. F. Dunlop; A. C. Hutchison; W. E. Doran, Treasurer.

The Committee on the preparation of a schedule of charges laid what they had prepared before the meeting. After some considerable discussion it was thought desirable to adjourn the meeting until the 8th inst., to try and get a larger attendance. The meeting adjourned accordingly.

At the adjourned meeting on June 8th, there were present: J. W. Hopkins, President, in the chair; V. Roy, 2nd Vice-President; A. C. Hutchison, A. F. Dunlop, A. T. Taylor, M. Perrault, A. Raza, W. E. Doran, Treasurer; C. Clift, Secretary.

The Committtee on schedule of charges again reported, and after the schedule had been thoroughly discussed, it was temporarily adopted.

The following applications for membership were received and accepted: O. Mailloux, St. Antoine street, Montreal; Thos. Raymond, St. Roch, Quebec.

Applications were received from the following students: A. Lefort, E. Heckok, A. Piché, S. Trappier, A. Content, A. Kaich, A. St. Louis, R. LeMay, D. N. MacVicar, C. S. Martel, J. Z. Despartie.

An application from D. A. Sincennes was received and accepted, but the Secretary was instructed to write saying the balance of his time must be served in the office of a member of the Association.

An application for membership was received from J. A. Thibandeau. The Secretary was instructed to write him asking him to have it signed by a member of the Association, and to send the registration fee of $20.

Messrs. Roy, Dunlop, and the Secretary were appointed to obtain rooms for the Association as soon as possible.

Several matters of business had to be left over.

The meeting adjourned until Monday, June 15th.

There were present at the adjourned meeting on June 15th: J. W. Hopkins, President, in the chair; A. C. Hutchison, J. F. Peachy, A. T. Taylor, A. F. Dunlop, C. Clift, Secretary. After the confirmation of the minutes, the Secretary reported that the schedule temporarily adopted at the last meeting had been sent down to Quebec for perusal by Messrs. Berlinquet and Peachy, and that no alterations had been suggested.

It was moved by Mr. Taylor, seconded by Mr. Hutchison, that the schedule be finally adopted and the Secretary at once have it sent down to Quebec in accordance with the Act of Incorporation, and that Messrs. Berlinquet, Peachy and Baillairge be instructed to see it laid before the Lieutenant Governor for his sanction. Carried.

The Committee appointed at last meeting to arrange about securing rooms reported that they had visited several places, and after careful consideration had engaged the two front rooms on the second floor of the Canada Life building at a rental of $200 per annum.

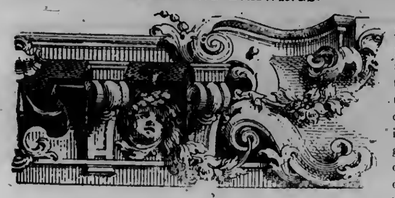
The Council sustained the action of the Committee. The Secretary was instructed to at once have them furnished sufficently for the use of the members and students.

The Secretary asked that architectural periodicals be at once obtained for the use of the students, etc., whereupon he was instructed to apply to the editors of the different journals.

The following applications for membership were received and accepted: A. Lévêque, Place d'Armes Square, Montreal; A. Vallee, Quebec; A. Dubicine, Quebec; H. C. Nelson, R. P. Baines, Ed. Maxwell, Montreal. For student associates: G. R. Crood, D. R. Talbord, J. G. Laurent, Montreal; E. Dusseault, Quebec.

Several applications were left over to another meeting.

MOUNTING DRAWINGS.



The following practical suggestions on mounting of drawings are given by our London contemporary, *The Illustrated Carpenter and Builder*:

To begin with, a paste of good quality is required. When paste is made at home, trouble often arises from scorching, or from the addition of too much water. Thoroughly made paste, when spread on paper, will not strike through, but will remain on the surface, like butter on a piece of bread. To enable the paste to keep for several months in a cool place, add dissolved alum as a preservative, in the proportion of a tablespoonful of pulverized alum in two quarts of warm or hot water.

Put the water in a tin pail that will hold six or eight quarts, as the flour, of which the paste is made, expands greatly while it is boiling. As soon as the water has cooled, stir in good rye or wheat flour until the liquid has the consistency of cream. Beat thoroughly with a paddle-shaped stick, and see that every lump is crushed before placing the vessel over the fire. Care should be exercised to have the water cool before adding the flour, otherwise the paste will be lumpy.

To prevent scorching the paste, place on the fire a pot or kettle partly filled with water, and set the pail containing the paste materials in the water, permitting the bottom to rest on a few large pebbles to prevent excessive heat. Of course, a "fairna kettle," or "double boiler," is better, and will be less troublesome to handle, but the "ruling element" of the kitchen will not always permit its use. Add a teaspoonful of powdered resin, a few cloves tied in a cloth, so that they will flavor and not discolor the paste, let it cook until it assumes the consistency of "mush," then, if any lumps appear, strain through a sieve. Keep in a tight jar, and if it becomes too thick after standing, put the quantity required in a suitable dish, and thin by adding cold water and stirring thoroughly.

So much for the paste. Now let us proceed to the mounting. Cut the cloth from one inch to two inches larger all around than the drawing or paper to be mounted. Lay it on a drawing-board or table, damp well with a sponge, stretch lightly, and tack down; use small tacks, and place them four or five inches apart, or closer if necessary.

Leaving it for a moment, and while its surface is evaporating and absorbing the surplus dampness, lay the drawing, map or paper to be mounted face downward on another table, and dampen the back with a wet sponge. Returning to the cloth, with a brush (a large, round, fine-haired paint brush is best) lay the paste on evenly and smoothly, and then, after the surface is well covered, take the brush and beat the paste thoroughly into the pores of the cloth. After this is done, smooth the surface nicely.

Take up the paper by the corners, and if the thickness of the paper seems to require it, apply the sponge again. The paper should be limp, but not wet. If it is not well prepared, my experience has been that the surface will "blister," particularly on large drawings, for the paste adheres much better to a damp surface than to a dry one.

At this stage it is best to obtain some assistance. Have your assistant grasp two of the corners of the drawing or paper while you manage the others, holding the paper suspended horizontally a few inches above the cloth. When it is in the right position place your end on the paste-covered cloth, while your assistant still holds his end up. Place a piece of clean paper on top to prevent smearing the sheet, and with the hands brush quickly from the middle of the end towards both sides working constantly towards your assistant as he slowly lowers the paper to the cloth. Rapid manipulation is necessary to ensure perfect contact and a smooth surface.

Should any "blisters" develop, rub them briskly with the bone handle of an eraser, or any similar substance. Small undulations will disappear when the cloth dries. Stand the board aside with the cloth tacked to it, and allow to dry, then cut off as required.

Ordinary bleached cotton cloth or sheeting makes a good backing for small sheets, while large ones are best mounted on a heavy grade of unbleached material. These directions are general, and have been found to work well in practice. Individual experience can alone, however, determine many of the details.

Other paste than that described may be used if desired, though it is doubted whether a better can be obtained. Should any of your readers know of a better method, many would doubtless be glad to hear of it.

PUBLICATIONS.

"According to St. John" is the striking title of Amelie Rives' latest novel, which will begin in the August number of the *Cosmopolitan Magazine*. This lady's startling debut in the literary field three years ago is not yet forgotten by the reading public, followed as it was by her marriage and retirement from active work, only occasional rumors being heard that she was employing her more mature mind in originating something of a higher order than that attempted in her earlier efforts.

The issue of the *Dominion Illustrated* for July 4th, has a fine account of a fishing trip by Douglas Sladen, the poet, on the north shore of Lake Superior, in that wild, grand, and picturesque region opened up by the C.P.R. Miss McLeod, whose reverent pilgrimage was so delightful a series of letters, contributes a charming article on Balmoral and the Highlands, illustrated by views of the Queen's favorite residence as seen from the river. "My First Twenty-Four Hours in a California Mining Camp" recalls vividly the famous days of the forty niners. There are many fine engravings and much bright reading matter in this issue. The *Dominion Illustrated* is a delightful weekly visitor that should be found in every cultured home.

PERSONAL.

Mr. F. W. Doan has been appointed to succeed Mr. E. H. Keating as City Engineer of Halifax, Nova Scotia.

Mr. Louis Baeque, Canadian agent of the Colman-Hamilton Company, was married a few days ago in Toronto to Miss Hattie Scott, second daughter of Mr. Hugh Scott. Mr. Baeque and his bride are at present honeymooning in the United States.

OUR ILLUSTRATIONS.

COTTAGES ON NASSAU STREET, TORONTO, S. H. TOWNSEND, ARCHITECT, TORONTO.

The materials used are dark color brick, shingled gable, oriels of wood, Credit Valley stone sills, heads, corbels, &c. Each cottage contains two parlors, 23′ × 12′; drawing room, 13′ × 15′; kitchen, 12′ × 12′; pantry, 6′ × 5′; three bed rooms, bath room, closets, &c., on first floor; three bed rooms, on upper floor; cellar and laundry in basement. Cost of pair, about $4,500.

PHOTOGRAVURE PLATE—RESIDENCE OF SIR DONALD SMITH, MONTREAL.—MESSRS. HUTCHISON & STEELE, ARCHITECTS, MONTREAL.

ALTAR IN THE CHURCH OF OUR LADY OF LOURDES, TORONTO.—CAPT. FREDERICK C. LAW, ARCHITECT, TORONTO.

NEW LIBRARY BUILDING, TORONTO UNIVERSITY.—MR. D. B. DICK, ARCHITECT, TORONTO.

TORONTO ARCHITECTURAL SKETCH CLUB COMPETITION FOR "A STAIRCASE IN WOOD"—DESIGN BY MR. MURRAY WHITE, AWARDED FIRST POSITION.

CONSTRUCTION OF ABBATOIRS.

As Toronto and other Canadian cities are considering the erection of public abbatoirs, the following recommendations, as to the points to be observed in their construction, contained in a recent report on the subject by the Borough Surveyor, of Brighton, Eng., may prove to be of value:

Construction of the floor and the drainage.—The whole surface of the land devoted to the purpose of an abbatoir should be covered with an impervious pavement arranged so that it may not become slippery; laid to proper falls with open drain channels leading to one common underground drain outside the buildings. This drain should lead to a catch-pit removed as far as possible from the buildings and having an overflow outlet to the sewer. The object of this catch-pit is to intercept all solid matters. It should be easily accessible and emptied daily.

Construction of the walls of the slaughter houses internally.—These should be as smooth and as free from joints as possible; finished with a smooth rendering of cement is the most preferable method. The walls of the cooling-room should have glazed bricks up to a height of eight feet from the floor.

Ventilation.—This should be as open and as free as possible both in the ridge of the roof and in the side walls, and otherwise where practicable by means of louvres, grilles, &c.

Water supply.—A very plentiful supply is one of the most essential conditions to secure a satisfactory degree of cleanliness in every department. Taps must be numerous, conveniently placed and very strong. A storage tank should be provided for use in the event of the main supply being temporarily cut off.

The boiler house, to provide hot water for use in the general slaughter house, and steam to heat the water in the pig slaughter house, as well as the hide and skin shed, should be arranged separately from the other buildings, and as remote as possible from the cooling rooms for carcasses. A covered manure shed should be as conveniently near the last-named buildings as can be, and the corporation should undertake to clear its contents daily.

Fodder store, offices, room for workmen, should also be arranged as a separate block of buildings, and should embrace ample and suitable stores for fodder, offices for the superintendent and for the butchers, with lavatory and other accommodation, and a waiting-room for the workmen wherein they may have their meals and refreshments. Residence for the superintendent and one helper should be provided on the site.

SANITATION AND HEALTH.

"SOME SUGGESTIONS ON HOUSE SANITATION."*

THE following schedule shews at a glance the methods the writer would recommend for dealing with domestic and household wastes, in different classes of buildings; also the prime cost of connecting with the street sewer and the cost of the necessary plumbing fixtures.

In the majority of cases one house sewer, one outside sink, and one yard hydrant would answer for several houses, thus greatly decreasing cost to each house as here given.

Economical and efficient removal from different classes of buildings.	Cheapest tenements monthly rental not exceeding $5.00.	Houses in which the monthly rental does not exceed $12.00.	Houses in which the monthly rental does not exceed $20.00.	Houses in which the monthly rental does not exceed $40.00.
(*a*) Liquid house wastes.				
1. Kitchen water (fatty)	Slop sink outside the building	1 Kitchen sink	1 Kitchen sink	1 Sinks.
2. Washing " (soapy)		2 " "	2 " "	2 Baths, wash-bowls & sink
3. Chamber slops		3 Slop sink outside.	3 Water closet	3 Water closets
(*b*) Night soil	Earth or ash closet.	Earth or ash closet.	Water closet.	Water closets
(*c*) Kitchen garbage	Burned in kitchen stove in whole or in part.			
(*d*) Ashes	Carted away as often as possible with the refuse that cannot be consumed.			
(*e*) Subsoil water	Removed by porous agricultural drain tiles.			
Cost of house sewer	$18 00	$18 00	$10 00	$10 00
" plumbing fixtures	$12 00	37 00	125 00	180 00
Total first cost	$10 00	$ 5 00	$135 00	$190 00

In houses indicated in the second and third columns of the above schedule the annual cost for odorless excavating and for removal of garbage and surplus ashes should not exceed $2.50 per year. In houses of the class mentioned in the last two columns there will be the additional charge for extra water required to flush the water closets, and other fixtures.

The cost of house sewer does not include the cost of that part of house sewer between the street line and the street sewer.

We will now describe the fixtures mentioned.

THE OUTSIDE SLOP SINK.

This slop sink should be of iron, preferably galvanized, and should have a cast iron outlet pipe 3 inches in diameter furnished with a deep trap of the same diameter placed from 3 to 4 feet below the surface of the ground (beyond the effect of frost). The ordinary "Merry Sink," 21½ inches long, 17 inches wide and 9 inches deep, to be had from all dealers in sanitary fixtures and illustrated in Fig. 1, answers admirably as it has no corners within that can retain dirt or filth, and the screen over outlet is large and

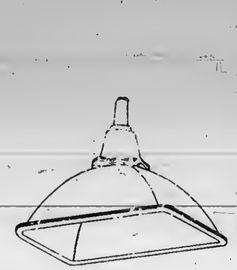


FIG. 1.

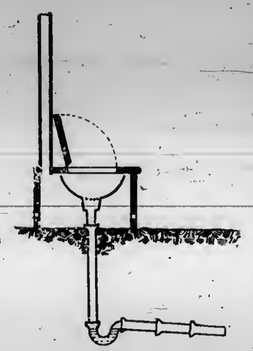


FIG. 2.

exactly suited for use required. This sink should be covered with a strong box of wood with hinged cover to protect the sink from injury. This box and enclosed sink should be ventilated by boring several holes through the box near the surface of the ground and by carrying a ventilating shaft of wood or sheet metal from the top of the box to some convenient height above the ground away from windows. This sink should be thoroughly and frequently scrubbed, and to prevent improper use of sink the screen or strainer placed over the outlet must be permanently fixed.

Unless kept scrupulously clean this outside slop sink should not be placed in any building or shed, but it may be placed at one side of an outside building; the ventilating shaft being carried up the side of the building. A roof may be built over the fixture if desired.

If roof water is permitted to enter the sewer system it would be advisable to allow one rain water leader at least to discharge into this sink.

The yard hydrant for water supply should be located so that drip and water can be readily conveyed to this slop hopper.

THE DRY EARTH OR ASH CLOSET.

"The dry earth or ash closet used for the "treatment" of night soil should be built according to the 'Brantford' plan. Fig. 3 shows the style of closet generally used in Brantford, where there are now about 1,300 in use. Movable drawers, boxes or pails are not used, because in this climate a little moisture freezing in winter makes their removal or emptying difficult. The box is therefore fixed and can generally be arranged so as to be emptied with a shovel by a door or lid in the rear, as shown in the figure.

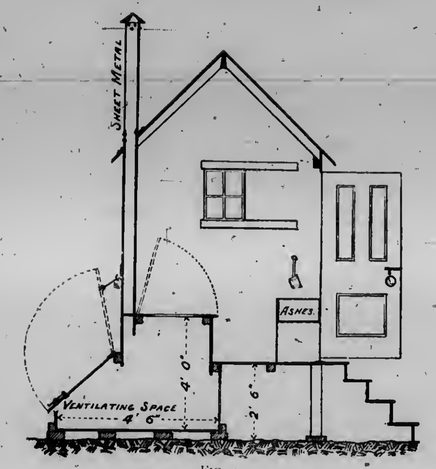


FIG. 3.

The boxes are made of lumber. A moderately tight box, not sunk in the ground, where no slops are thrown in, good ventilation provided, and a little dry earth or coal ashes thrown in at each use, or even once daily, will not become offensive and will last for half a lifetime. This closet is very cheap. Old privies can easily be changed into ash closets by emptying and cleaning the pits and filling them with clean earth, then raising the structure about two feet, placing the box under and providing a couple of steps. In many places in Brantford they are built under back-sheds, etc., with access from the house.

An ample box should be provided within the closet for the coal ashes or dry earth, also a convenient scoop or dish for their application. Dry earth (top soil, never sand) is assumed to be the proper application, but in practice it is little used, being not ready to hand as the coal ashes usually are, and being often not dry. The coal ashes should be kept under cover, they need not be sifted. Wood ashes in practice are found to be offensive. In the public schools in Brantford a shovelful of coal ashes is thrown down each opening once a day by the janitor after the school is closed, and after six years' experience these school closets are proved to be as inoffensive as the best arranged water closets.

These ash closets make no provision for liquid refuse, and it is imperative that no chamber slops or kitchen refuse should be thrown into them. The disposal of such liquid fluid should be by the outside slop sinks connected with drains or sewers. Where there are no such drains or sewers the disposal of such liquid refuse is, in crowded neighborhoods, a difficult problem, and it is not the purpose of this paper to speak of the many expedients resorted to for solving it.

The dry ash closets should be emptied once a month for an ordinary family service or for schools. In other cases a more frequent service may be necessary.

The cost of a monthly service is in Brantford $1.80 per annum. The average distance to the dumping ground being about 1½ miles. One man with a one-horse cart easily attends to 600 closets. It is absolutely necessary that a systematic and efficient contract service be provided.

It may be added that while serious difficulties exist in providing dumping grounds for the contents of privy pits and cesspools, no difficulty whatever has arisen as to the dumping of contents of dry ash closets, such being readily disposed of upon market gardens.

In those of our cities already well provided with sewers, thousands of noisome privy pits still exist. (There are over 12,000 in the city of Toronto.) The expense of introducing water closets in the cheaper tenements, the want of a suitable place to locate them where they would not be affected by frost, and the additional water rates required for flushing them, prevent their erection in such tenements. The systematic introduction of dry ash closets in these cases in conjunction with the outside slop sinks offers an effectual means of abating this widespread and dangerous nuisance."

GARBAGE.

Combustible garbage can be burned in the kitchen stove, and the ashes

* Abstract of a paper prepared for the Association of Health Officers of Ontario, by Willis Chipman, C. E.

not needed for the closet, together with the incombustible garbage and refuse, should be removed periodically by carts.

CELLAR DRAINAGE.

Cellar drainage can be best secured by keeping out surface waters by proper ditches and channels, and by lowering the subsoil water by the use of porous agricultural drain tile as shown.

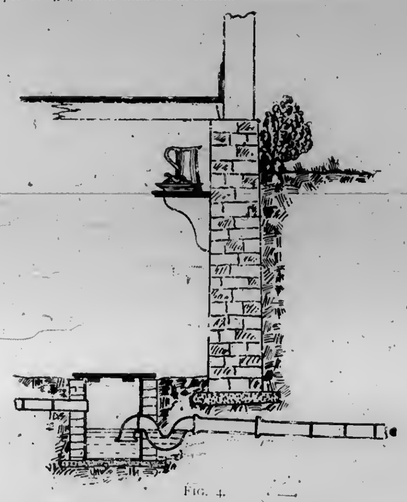


FIG. 4.

A small well or pit about 2 feet square and 2 feet deep should be built of brickwork about 2 feet from the cellar wall at the point of exit of the drain, this pit to serve as a small catch basin, preventing entrance into the street tile or basin tile of dirt, sand, or other foreign bodies. Into this pit the drain tiles that outside the foundation walls, and in wet, springy ground, under the cellar floor, should empty.

The exit should not be less than 18 inches deeper than the floor of the cellar.

In most cases it is desirable to place a trap on this drain as near the inlet as possible and a fine wire netting should be placed over the inlet.

The cheap cottage, renting at $5 per month or less, has now been provided for.

THE KITCHEN SINK.

In houses renting from $5 to $12 per month, a kitchen sink is the only inside fixture required, the outside slop hopper being still retained for chamber slops, as well as the dry ash closet for nightsoil.

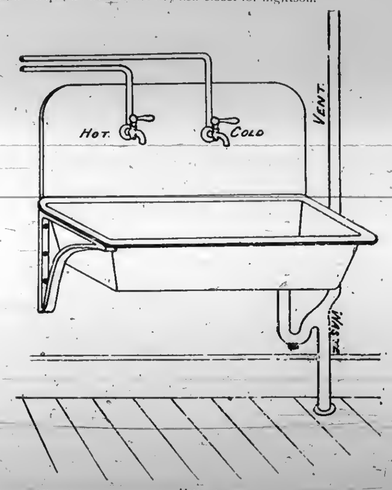


FIG. 5.

This sink should be of iron, preferably porcelain lined, properly trapped and the trap ventilated by a pipe not less than 2 inches in diameter, carried through the roof. The waste pipe should be of iron, well coated with asphaltum varnish, with screwed joints or run with lead and caulked. The house sewer should be four inches in diameter, of vitrified salt-glazed sewer pipe, except for five feet entering the wall of the house which should be of cast iron "extra heavy" soil pipe 4 inches in diameter.

The ordinary cast iron sink of the hardware shop, if it has a proper fixed strainer, and if properly supported, and if kept well painted, is perfectly safe and is cheap. Galvanized iron or pressed steel sinks and porcelain lined sinks are better but more expensive.

WATER CLOSET.

In houses renting for more than $12 per month a water closet should be substituted for the outside slop sink and the dry-ash closet, this one fixture combining in itself water closet, urinal and slop hopper.

This fixture should be of strong earthenware with all parts easy of access; so that need of cleansing may be apparent to the eye before any other sense is cognizant of the fact.

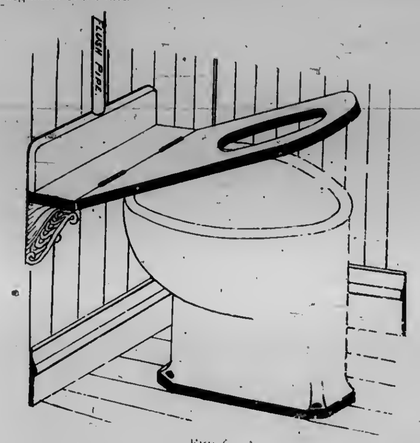


FIG. 6.

The closet above shewn is one of the best of the cheaper closets in the market. It has a broad base, thus being not easily loosened by rough usage. The "horns" for connections are very strong and well proportioned, thus not easily broken off by carelessness or by accident. The outlet is at the front—not obstructed in any way by bends—thus allowing of instant inspection and easy cleansing. The flush is thoroughly effectual and not spattering, as many otherwise good closets unfortunately do. This closet is of so heavy and strong a design that no supports are necessary for the seat, which rests directly on bowl, but rubber cushions should be placed on lower side of the seat. The hinged seat should be counterbalanced to prevent danger from rough usage.

No part of closet pipes or connections should be encased with any woodwork whatever. The wooden seat as shown is all the woodwork required.

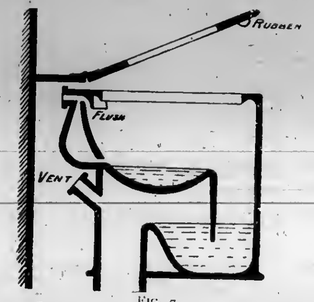


FIG. 7.

The water closet compartment should be well lighted and ventilated by a shaft extending from the ceiling over the fixture to the outer air, to the "cock loft" of the building, or to a flue or chimney; this shaft to be not less than 40 inches in area.

In any building or house only two fixtures are absolutely necessary for the removal of liquid household wastes and the excreta, viz.: the water closet and the kitchen sink; and except for the great inconvenience the water closet could be made do for both.

In choosing a water closet avoid "pan closets," "plunger closets," "valve closets" and "hopper closets." A simple washout closet in one piece, with front outlet, is the best closet of moderate cost now made.

OTHER FIXTURES.

The addition of baths, wash bowls, laundry tubs, etc., are conveniences, not necessities; but in putting in a soil pipe "stack" connections should be left for bath at least, and for any other fixtures that will probably be added within a few years. These connections should be securely plugged.

The fewer and more simple the fixtures are, however, the less becomes the possibility of danger from poor plumbing, and the less the first cost and annual maintenance.

DECORATION AND FURNITURE

THE WORKING QUALITIES OF PAINT.*

PAINTING may be divided, according to the use to which the paint is put, and especially according to whether it is expected to protect a surface or not, into two classes. The first of these classes is generally known under the head of "house painting," and covers the painting of all surfaces, where the paint itself is not only expected to give the appropriate color that is desired, but also to protect the surface against the weather. The other kind of painting is known as "coach painting," in which the color is the thing sought for, the protection of the surface, and also of the coloring material of the paint, being secured principally by the varnish. These two kinds of painting are characteristic and distinctive, and both require different qualities in the material to be used.

In order that paint, to be used for house painting and analogous purposes, should work well, two or three points seem to be essential. First, it must not run off the work; second, the brush marks made during application must disappear later; and third, the work must not appear spotted or streaked. In general these qualities are obtained by what is commonly known as proper mixing, although the grinding, the purity of the oil, and the kind of dryer used all have influences.

The running of paint may be due to two or three causes. The paint may be applied too thickly for the kind of paint used; for example, to put on as thick a coat of very thin paint as paint containing a larger percentage of pigment would inevitably result in the paint running. Of course linseed oil alone can be applied to a surface with a brush without running, provided too much is not put on, and the greater the percentage of liquid in a paint, the thinner the coat must necessarily be. This application of thin coats is a very common fault, especially in contract painting. Where the pigment is strong in coloring and covering power, the temptation is to put on very thin coats, which temptation is increased by the fact that thin coats dry quicker than thick ones. Of course with proper care in using a very thin paint, there need be no difficulty from running. Another cause which may lead to running is want of proper grinding. The finer and better mixed the pigment and liquid are, the less the tendency to run. A paint mixed up by simply stirring the dry pigment into the liquid, is more apt to run than one which has been ground. The oil leaves the coarser portions of the pigment, and carries off the finer portions with it, resulting in streaks down the work. With proper proportions between the liquid and pigment, this difficulty can be obviated, but some pigments, as is well known, cannot be ground, and are therefore always used by simply mixing with the liquid, but a paint otherwise good and properly proportioned may give difficulty from running if it was not finely enough ground. Still another cause of running is too long a time after the paint is put on before it sets. We have mixed up two paints, one of which would take a set, although not dry, in from six to eight hours, and another which would not take a set in twice that time, the amount of pigment and liquid and the grinding being exactly the same, and the second would run, while the first would not. It is very easy to see why this should be so. A thin layer composed of liquid and pigment, maintaining its limpidity, and being in a vertical position for a long time, will run off from the surface more readily than one which does not maintain its limpidity, although other things are the same. The paint which takes a set, thereby losing its limpidity, resists the strain which produces the flowing or running in the other paint. Adulterated oil, especially linseed oil containing petroleum product, is liable to this same difficulty, and for the same reason, namely, the oil on the surface maintains its limpidity for a long time, thus giving gravity a long time in which to act upon the paint. The obvious remedy for running due to this cause is to use such an amount of dryer, with pure oil, that it will take a set from four to eight hours, and where the difficulty is due to adulterated oil, the remedy is apparent without explanation.

The difficulty of the brush marks remaining prominent in paint is largely a question of the relative amounts of liquid and pigment, although not wholly so. The nature of the liquid used comes in as an element. For example, if a large amount of very thick Japan is a constituent of the paint, or a heavy, viscous, boiled oil, other things being equal, the brush marks will have a tendency to be more prominent than where raw linseed oil and a limpid Japan are used, but the proportions of liquid and pigment are, nevertheless, in all cases the important consideration. If the liquid is viscous and sluggish in movement, less pigment is required; with a very limpid liquid more pigment can be used without causing the brush marks to be prominent. It is also quite probable that the grinding has an influence on the degree of permanence of the brush marks. Coarsely ground paint, under no circumstances, would allow the brush marks to flow out as readily as where the pigment is in a very fine state of division, and with that perfect union between the pigment and the liquid which is produced by fine grinding.

Streaked or spotted painting may be due to two or three causes. It often happens that the pigments made use of are what may fairly be termed "composite," by which is meant different chemical substances constitute pigments, and often in cases where the pigment is nearly all one chemical substance, as in chrome yellow or white lead, it frequently follows that materials made at different times differ in both shade and fineness, but are subsequently mixed together. In all cases where a pigment is composite our experiments seem to indicate that there is a tendency for the very finest particles to separate from those which are coarser, so that each successive brushful taken out of the bucket may contain a larger percentage of the fine, and a smaller percentage of the coarse particles than the previous brushful, at least while the first half of the bucketful is being used out. In some paints it is actually noticeable that the last end of the job is of a different shade from the first, especially if the painter has not stirred his bucketful of paint frequently. This separation of the different constituents of the paint is also especially true of those composite pigments which are made up of some heavy basis, with some organic or light coloring matter; for example, Tuscan red, which, as is well known, is a mixture of oxide of iron known as Indian red, with some of the red lakes. It may fairly be claimed that this difficulty of spotted or streaked work is more a question of care on the part of the painter than of the proper mixing or proportioning of the paint, and this is to a certain extent true, but it is not wholly so. Poorly ground paint is especially liable to give streaked results, and no amount of subsequent stirring or mixing on the part of the painter will make a pigment consisting of very coarse and very fine particles a good one to spread, or make it give a good-looking job. Both fine grinding and great care on the part of the painter are essential to obviate this difficulty. It of course goes without saying that those pigments which, from their nature, have a tendency to produce this difficulty should not be mixed where it can be avoided, although in our belief fine grinding will almost entirely overcome it with any pigments, whatever they may be.

It will be observed from above discussion that the essentials of good working house paints are fine grinding, pure oil, proper mixing, and the proper amount of dryer, together with good judgment and care on the part of the painter. Of these essen-

* Extracts from a series of articles on practical railroad information, the results of chemical and practical experiments, by C. B. Dudley, chemist, and F. N. Pease, assistant chemist, of the Pennsylvania Railroad. Published in the *Railroad and Engineering Journal*.

tials the grinding and the use of pure materials are incumbent on the parties furnishing the paint. The proper proportioning of the pigment and liquid, the use of dryer of the right kind and in the right amount, and the skill and care during the application, are incumbent on the foreman painter or his subordinates. It may be thought that in treating this subject of the proper application of the paint, the brush may be regarded as an essential element, and this undoubtedly does have an influence, especially in brush marks. However, our experience indicates that this element is less important than would generally be thought, as a skillful painter, even with a poor brush, will make a good job where an unskillful man with a good brush fails. We think it fair to say, however, that it is more wearisome to the arm, and more difficult to get good results with stiff brushes than with those which are more soft and pliable; also in our judgment there is very little economy in using poor brushes.

MANUFACTURES AND MATERIALS

WEATHERING OF BUILDING STONE.*

At the last annual Convention of the Ontario Association of Architects, Mr. Alan Macdougall, Chairman of the Toronto Branch of the Canadian Society of Civil Engineers, very kindly offered some remarks on the weathering of stones in buildings that had come under his notice.

Mr. Macdougall described also some ominous cracks that had occurred without any apparent reason in the tower of a church in St. John's, Newfoundland. The tower was built upon solid rock, and the only conclusion he could come to was that the corner of the tower had moved bodily, or in other words, slid upon the surface of the rock. Whatever movement had taken place was, however, arrested, and the building had been in the same condition it now was in for many years.

One result of Mr. Macdougall's investigations had been that he was certain *imported* stones did not stand a foreign climate as well as native stones. Stones found under certain conditions of atmosphere and climate were more capable of resisting disintegration under the same influences than stones found under different conditions. A building stone might be very excellent in its native country, but could not be trusted to withstand climatic influence of an entirely different nature to that of its own land.

Mr. Macdougall's remarks were very interesting, and led to a discussion, which we give below.

DISCUSSION.

The President: I am sure we are all very much indebted to Mr. Macdougall for his very interesting paper. It introduces a new feature in the discussion of building material from what we have been accustomed to.

Mr. Gambier-Bousfield: I rise to move a vote of thanks to Mr. Macdougall for his paper. I do so with special gratitude, because he is not a member of our Association, but he was kind enough to volunteer this paper because he knew it was a subject that would interest us all very much indeed; and it has been one which has given us cause for a good deal of thought, and I hope to hear from some of the members something more like the "Weathering of Stones." I should like to ask Mr. Macdougall if he has noticed the curious weathering of granite under frost and sun. There are two granite rock crosses standing in a small open space in England—I cannot just recollect the spot—and on the south side the sun has caused the granite to flake off to the depth of three quarters of an inch. The appearance is just like a tree trunk with pieces of bark pulled off. Those crosses have stood there probably for three or four hundred years.

Mr. Langton seconded the motion of thanks.

Mr. Billings: Did I understand that the crack went the whole way down in a straight line?

Mr. Macdougall: No, but almost a straight line.

Mr. Billings: It is possible there was a weakening in one stone first, and the other was cracked by pressure.

Mr. Macdougall: It must have been something of that kind. In that particular case there must have been some weakening somewhere to cause the first, because it would not be possible that you would have one cleavage generally running all through a number of stones; that is the curious part of it. Whether it is a weakness due to foundation I can't tell. The stone that forms the backing of the tower and the local stone has not given, and when you look at the wall of the cathedral you don't notice the cracking there, nor on the bishop's palace immediately adjoining.

Mr. Billings: Is it a stone that has some crystalline filling that is easily soluble by the humid air?

Mr. Macdougall: Of course it would be. Every stone has a certain cleavage plane, but you find what we technically call "dries" which comes out afterwards by the weather. The curious part of this was, there was such an immense deal of it.

Mr. Billings: There is a question I want to ask in connection with the efflorescence in Halifax, where they use so much of that brown stone. It was said to have been owing to the fact that the stone was taken from between high and low tide, and it was the salt that caused that very largely. I don't myself think it is so. I have the impression that the Halifax men have been content with the poorer qualities, and have shipped the best to Boston.

Mr. Macdougall: Is it a local stone?

Mr. Billings: That from Hopewell and Fairville. At Ottawa, in the balustrade of the steps of the Commons and Senate, the columns have gone the same way from efflorescence, and we thought it was from the sulphurous acid, because it was the Ohio sandstone that was used there. Now they are putting in bronze balustrades.

Mr. Macdougall: In the inside of the House of Commons?

Mr. Billings: No, the outside. They are putting in bronze balusters to support the Ohio sandstone rail, just owing to that cause. They have had several times to put in fresh Ohio sandstone because they never stood. I think our own Canadian sandstones and limestones are far superior to those from Ohio. We have in a great number of quarries in Canada very good stone, and still the people bring in stones from other countries, especially that Ohio sandstone, which behaves very badly in this climate.

Mr. Paull: Mr. Macdougall said the British Houses of Parliament were built of Portland stone. I think that is a mistake. I think it is Yorkshire stone, and that there is no portion of the Portland stone in them. Might not those cracks in the stone be caused by temperature? Where there is a large stone space in an intense cold, say 20° below zero, the interior of the stone would be of that temperature; then if a sudden change should take place, say 15°, in the course of a short time the outside would expand, and by that sudden expansion and contraction I think it would be very likely that the stone would crack. Now, in making large castings it would be necessary to make preparation that the temperature should alter after a long period to prevent fracture. These stones would be subject to fracture, I presume, much in the same way as castings would be.

Mr. Belcher: I recollect in England some thirty years since where a tower similarly situated cracked in a similar manner, and Sir Gilbert Scott was called in and he removed a portion of the under tower and discovered the cause to be a rounding in the rock, which was not levelled off perfectly level with the imposition of the building and it slid on the rock. In looking at your sketch there, it occurred to me that the front portion of the tower might have been on a level plane, and that the rock just curved off where the wall exists, and hence the fracture.

Mr. Macdougall: I don't think you can account for the long fracture in any other way than that there must be some slight defect in the foundation. It may be that the foundation was not laid perfectly level, or some stones not being perfectly level cracked, and that caused the other crack. With reference to the weathering of granite, no great observations have been made so far as I personally know or my study of the question goes. The granite of this country has not been sufficiently long put up to make any close calculation or examination into it. There is no doubt a granite, in its perfectly pure geological definition, could be put down as a composition of quartz and feldspar, and it is the feldspar which really gives the strength to the granite. If you have a feldspar which is of a soft nature, the action of the weather will attack that, and through that disintegration will take place. The matter was investigated partly by Prof. Geikie and also by Prof. Pfaff, but neither came to any conclusion on the subject. The matter mentioned by Mr. Belcher is very interesting; I was not aware of it. As to the life of building stones, I am not prepared to say anything, but I think the question is an extremely interesting one and I shall certainly make it a point of study next year, and if I can on any future occasion give you any information I shall be pleased to do it. (Applause). I think the effect on the stones in Ottawa is due altogether to their position; that is exactly the position of those tombstones I mentioned—they are in the angle of a wall; and this stone I showed you as bulging was exactly so—in the angle of the wall. There you have a very large amount of moisture, with the action of the frost, and no doubt the sulphurous acid and also carbonate of oxide; because you have noticed that in certain winds the smoke from the buildings is blown down, and you get a very strong smell off a great many buildings of what you would commonly call "coal gas," and when that is blown down directly on to the building its action must affect the stone. That is Ohio stone, is it not?

Mr. Billings: Yes, it is from Amherst, near Berea.

Mr. Macdougall: I suppose it is from the same stratification of rock?

Mr. Billings: Yes, it is all from the Devonian sandstone. The water falling, no doubt, as you say, brings down the sulphurous acid, because in the fire-places they have bituminous coal all through the building, and a great broad stripe is visible down through the angle there.

Mr. Macdougall: That is just exactly the cause. The sulphur and carbon in it comes down and coats it.

Mr. Balfour: With such an example as has been given us on the board, with stone in the neighborhood of Kingston, I would account for it in altogether a different way. Taking that just as it stands before us, I would put this version on it. The weathering given us there between the two windows has on the start taken water—perhaps through the joint just on the coign. The water has gone through that stone and softened the mortar beneath it. The mortar has taken water from that crack, and the frost, expanding the mortar, has snapped the first stone. That would take place probably in some sudden change of weather. That would go on from month to month and year to year, and the water would follow that down until it came to the bottom. After going a certain distance below that belt again, the mortar being first softened, made sand of right under the belt, the stone next above it has a bearing on the inner corner and nothing on the outer. As soon as that goes down the weight is thrown on the corner, and that stone is snapped; and it will follow it up. We had an exact example of that in the Roman Catholic cathedral in Kingston. There is a tower there, and small ones on the corners, that cracked, and weathering was just exactly in that position; and I saw that thing going and followed it for ten or fifteen years, and I think there is no doubt that that is the way that went.

Mr. Dick: The instances of the weathering of stones that have been had before us this morning, as well as the experience of most of us, go to show the great necessity of having a scientific investigation of all the building stones that we use, both native and imported. (Hear, hear). We have all seen instances of failure from using a weak stone where a strong one might have been had. I remember a case in my own experience on an arcade carrying considerable weight, granite columns and limestone caps. These caps crushed under the weight. I had the arches shored up, the caps cut out and replaced with red Credit Valley stone about the same size as the original cap. This stood the weight perfectly, and stands to this day without a sign of a crack or failure. Mr. Macdougall will recollect the parish churches of Edinburgh, which were built of Leith stone—a stone which was very soft when it came from the quarry, but in the course of a few years became so intensely hard that no stone-cutter liked to cut it. After sixty or seventy more years every course on those churches was as sharp as the day it left the quarry, while on other buildings made of local stone, they had become quite soft and ragged. I never could understand why the balusters at Ottawa should have gone the way they did unless the disintegration arose from the way they were placed on the top of the landing, where they were exposed to chemicals being brought down from the atmosphere or from the roof—more probably they washed down from the soot deposited on the roof. I do not see any other way of accounting for it, unless it may be that some chemical such as salt has been used at some time on the steps to melt the ice at certain times. Salt might be injurious. However, there is another circumstance that has been frequently observed in England and Scotland, and that is, that a stone always wears best in the district in which it is quarried. (Hear, hear). Many instances have been noticed of stone taken to London, where there is no building stone in the neighborhood—taken from the North of Scotland, for instance—which would not stand well in London, though it stood well in its native district. Of course that might be accounted for by the amount of sulphurous acid and other chemicals in the London atmosphere; but still it seems to be a matter of fact that a building stone does stand best in the district in which it is quarried. We are rather unfortunately situated in that respect in Toronto, in so far as we have nothing but intractable stone to work, and are therefore dependent on our neighbors; and the stone must be brought, too, a very considerable distance from its native district before we can use it; therefore it is not likely that it will stand as well as it would have done

*Abstract of paper read at the Third Annual Convention of the Ontario Association of Architects, by Mr. Alan Macdougall, C. E., and discussion thereon.

RESIDENCE OF SIR DONALD SMITH, MONTREAL, QUE.
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SUPPLEMENT TO
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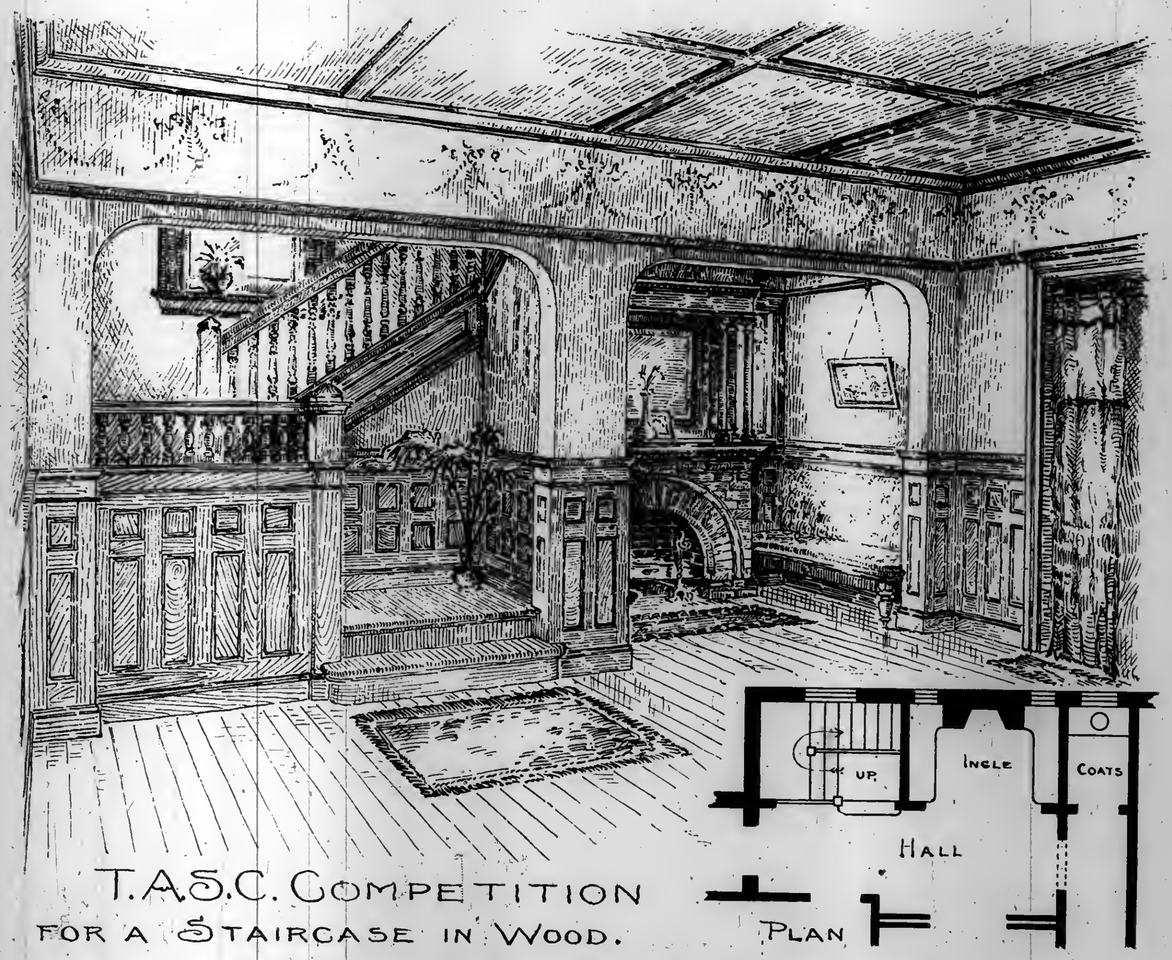
VOL. IV., NO. 7.



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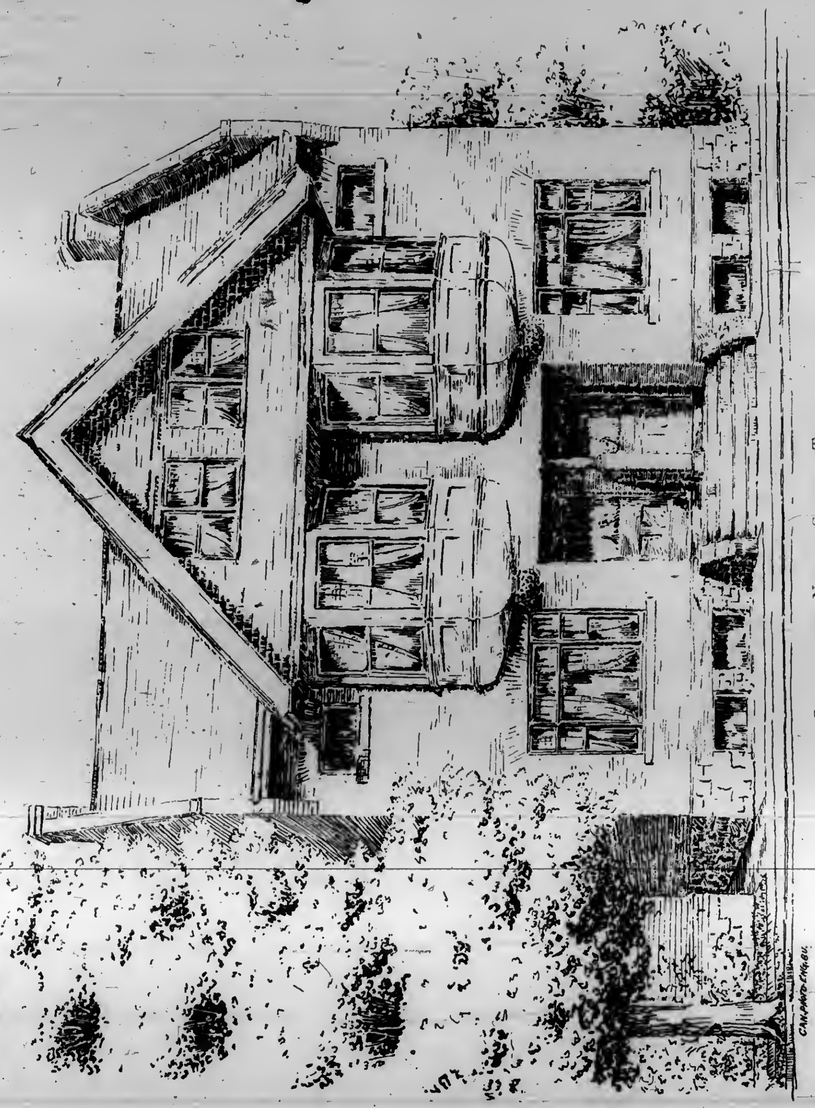

Cottages on Nassau Street, Toronto.

Mr. S. H. Townsend; Architect, Toronto.

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THE annual meeting of the Province of Quebec Association of Architects will be held in the city of Quebec on Tuesday, the 8th of September.

THE plumbers, gas and steamfitters of London, Ont., having failed to induce their employers to reduce their hours from 54 to 50 per week and increase their wages from 23 to 25 cents per hour, have for the past three weeks enjoyed a holiday, while the master plumbers have been forced to take off their coats and "earn their bread by the sweat of their brows." The strike, which promises soon to cease, has brought a few outsiders to the city, and these, with the repentant strikers, who do not like the idea of resting without pay, are managing to keep pace with the work. The time chosen was inopportune, as most of the spring contract work has neared completion, and none of the trades have been troubled with too much work this year.

THE extent to which new and superior quality building materials have come into use within the last ten years, is well illustrated by the growth of the Canadian pressed brick industry. Five years ago pressed brick was a rarity. The few required were imported from the United States, and cost something like $40 per thousand, exclusive of duty. Three or four years ago some enterprising Canadians began to manufacture pressed brick, and in a short time were able to offer an article which stood a fair comparison with the imported brick, and at half the price. The result is a wonderfully increasing demand, and a multiplication of manufacturers from one to four or five. Not only is pressed brick everywhere to be observed in the cities, but from the towns throughout the country there also comes a considerable demand. The facilities for cheap production are such, that it is believed Canadian manufacturers would be able to compete with advantage for business in some of the American cities near the border.

THE architects of the Australian colonies are fighting a battle for incorporation and registration similar to that in which the Ontario Association of Architects was recently engaged. Our contemporary, the *Australasian Builder*, is doing yeoman service on behalf of the movement, and in its issue of May the 9th, prints the full text of the Ontario Architects' Act. The Victoria bill includes several of the clauses which were thrown out by the Ontario Legislature, such as that no person but a registered architect shall be entitled to recover at law for professional charges, also that forbidding public bodies from employing any but a registered practitioner; and one that no certificate shall be valid unless the person signing the same be a registered architect. We shall follow with a great deal of interest the fortunes of this bill. It is our hope that the architects of the antipodes may not only secure legal recognition, but legislation which will be of more assistance to them in their efforts to place the profession on a proper footing, than that which obtains in Ontario.

A REPORT has recently been made by Sir John Fowler to the directors of the Brighton Railway Company in England, on the condition of the bridges on the Company's lines. The result of Sir John Fowler's inspection has given rise to alarm for the public safety. The report intimates that no less than eighty bridges have been found to be so defective as to render their entire reconstruction necessary within a period of two or three years. The demand is made for a Royal Commission to define the enduring qualities of iron under the stress of moving loads,

and the kind of material and method of construction to be employed in the erection of railway bridges. Seeing that in no country in the world, in proportion to population, are there so many railway bridges as in Canada, this subject comes home to us with striking interest. The Minister of Railways and Canals might profitably consider whether in the interest of human life, some method of official enquiry into the condition of railway bridges throughout the Dominion should not be made at regular intervals.

A REFERENCE was made last week in one of the Toronto dailies to a test by the firemen of the water pressure in the early morning, before any serious drafts were made upon it either for domestic or business purposes. It was found that the water barely reached the roof cornice of the new Canada Life building, and that only in a fine spray. The writer then goes on to suggest the advisability of purchasing engines of sufficient power to throw an efficient stream over the highest building. But we would suggest a more excellent way. The larger cities have all passed through trying experiences with regard to conflagrations which have raged in high buildings. Whole brigades of powerful engines, handled in the most admirable manner, have failed to cope with the devouring element. The only safeguard is to compel all parties erecting structures higher than say 60 feet, to adopt either slow-burning or fire-proof methods of construction —preferably the latter—and the sooner civic authorities wake up to this fact, the better it will be for the safety of property and the best interests of all concerned.

THE question of letting contracts in bulk or to the separate trades was discussed lately by the New York Armory Board. Mr. Thomas, their architect, warmly espoused the system of letting to separate trades, asserting that the figures would be lower than if received in bulk; also that as he had given a bond guaranteeing that the cost should not exceed a certain amount, his advice should be followed. But the Board ordered otherwise, basing their reasons on the delay caused on another building, where the various trades endeavored to throw the blame upon each other. There is no doubt that as a rule it is to the advantage of the proprietor in every respect (except, perhaps, in regard to that of delay), that the architect should deal directly with the contractor for each trade—a better class of men will tender for the work, knowing that they will have fair treatment and no trouble in obtaining their money. The tendency with a contractor is to increase his profits by securing very low figures from sub-contractors, who in turn will do their work in an inferior manner, hoping that the architect will not be too hard upon them. That unfortunate individual has too often to let work pass for the sake of completing the building in time, that he would otherwise condemn.

THE tests of building stones on the new and interesting machine at the School of Practical Science were commenced last week by Professor Galbraith, with Mr. Rosebrugh as his assistant. The Ontario Association was represented by Mr. Townsend, by whose efforts the collection of stones was obtained, and by Mr. Curry, while other members dropped in from time to time. The work had to be postponed after a portion of the blocks had been tested, the remainder not having been properly squared, a slight inequality even interfering with the accuracy of the tests. We will give, in a later issue, the data obtained, in a form which we hope will prove useful and interesting to all connected with the building trades. It is the aim of Professor Galbraith and the Ontario Association to furnish data which will be thoroughly reliable, and as it is the first scientific attempt in this line, it is not advisable that it should be rushed through with undue haste and at the expense of thoroughness and accuracy. The samples are now being put in proper form. We understand there are still some quarries unrepresented. It will be to the interest of all dealers who have a good article to send sample, as the result will be published far and wide.

THE Building Committee of the Montreal Board of Trade have opened the tenders for their proposed new building, but have not yet yet let the contract. It is rumored that the tenders have far exceeded the appropriation (by more than $100,000 in fact), and that all the contractors who tendered have had their guarantee cheque returned. It is also rumored that one or two Montreal architects who were among the competitors threaten to sue the Board of Trade for the amount of their prospective fees, they having obtained estimates from reliable contractors guaranteeing to erect the buildings from the designs of these rejected competitors for the amount named in the conditions of the competition. It is reported that the Board of Trade will fight these claims with the plea that they made certain modifications or additions to the accepted design, and that they had a perfect right to thus waive the original conditions. It is also whispered that the enormous increase of cost has frightened the subscribers to the building scheme, and that the enterprise is going begging for funds. No doubt the history of the dealings of the Building Committee of the Toronto Board of Trade has put the Montreal men upon their guard. We are of the opinion that if the Montreal Committee had patriotically dealt with Canadian architects the feeling of insecurity in regard to abnormal cost would have been allayed, and that funds would have been forthcoming and contracts let by this time.

CANADIAN city, town, and even village municipalities are rapidly falling into line with the scientific progress of the age by adopting improved systems of water supply, drainage, etc. These improvements have such an important bearing upon the public health and comfort that municipalities which fail to keep pace with the march of improvement in this direction cannot expect to long retain their prosperity. The change which is thus taking place is one which adds very considerably to the importance and responsibility of municipal engineers, who find themselves called upon to solve many new and difficult problems. In view of this, might there not be a field of usefulness awaiting a Canadian association of municipal and county engineers, such as exists in England? We have our Canadian Society of Civil Engineers, and of Medical Health Officers, which in a measure discuss municipal engineering problems, yet we imagine there are many questions with which the municipal engineer will be called upon to deal, that have never engaged the serious attention of the Societies mentioned, and that might be exhaustively and profitably considered by an association exclusively organized for the purpose. From the address of the President at the annual meeting, we learn that the "Incorporated Association of Municipal and County Engineers," was organized with a membership of 33 in 1873. To-day the membership amounts to 400, and embraces not only the municipal engineers of almost every town in England, but also gentlemen holding official appointments in Canada, Australia, China, and other countries.

Fault should not be found with the architect who strives to impart originality of design to his buildings. The streets of most of our towns and cities have been deprived of many interesting features which they might have exhibited if originality had oftener marked the work of architectural designers. Unfortunately, however, there is another side to this subject. It is shown in the increasing attempts of persons with little or no knowledge of the past history of architecture, to produce something new, and the wretched results which in too many instances follow such attempts. A walk around the streets of Toronto will reveal innumerable architectural absurdities, and unfortunately, they are to be found about as frequently in the new buildings under construction as in those of past years. The numerous two-storey frame structures on Yonge street for years served to detract from the importance of that thoroughfare, and citizens who took pride in the progress of the city, looked anxiously to see them supplanted by new buildings of pleasing design. Some of these old buildings are now being removed, but in some instances the new ones taking their place are sadly disappointing. In fact some of them are less attractive than the old ones, which is saying but little to their praise. It is surprising that the owners of such valuable property should be short-sighted to their own interests, and offend the public taste of this and coming generations by permitting such structures to be erected. Let us have originality in design, provided it is of a different order from that to which we have referred. Otherwise, let us continue to copy old examples until we shall have learned something of the history and principles of design.

THE system of appointing an assessor or professional judge in English architectural competitions is gaining ground, and marks a new era in the history of the craft and in the education of the public. The aforesaid public is, we hope, beginning to see that men of ability will not put themselves unreservedly into the hands of every Tom, Dick and Harry who may happen to be foisted on to a building committee regardless of fitness for the position. The next point that should be strenuously insisted upon by architects, is the naming of the judge or judges simultaneously with the announcement of the competition, and that the terms of competition should be drawn up by or with their advice. When this procedure is followed, the competitor knows what he is about and what to expect. With regard to the tendency to pander to the tastes of the assessor, "Goth," in *Building News* "Wayside Notes," puts it naively when he says:—"There is such a thing as there has, indeed, been too much—pandering to the tastes of the assessor, but short of this it is to the common advantage of competitors to know that Mr. Dog-tooth or Mr. Egg-and-Tongue has been appointed. Panderers, doubtless, often deceive themselves, as there must be many men who would rather be prejudiced against competitors that they suspected of pandering to their known views on architectural design. My own reason for liking to see the name of the assessor beforehand is, that one is prevented from wasting time on a subject of which the assessor may be ignorant. Often architects, unlearned in the design of the class of buildings to which a certain competitor refers, have been appointed assessors, and I can say from experience that it is no joyful news to learn that an assessor has been appointed to judge plans who knows about as much about the special design of the particular building as a milkman knows how to make milk."

Apropos of the above remarks on competitions comes the news that the government of New South Wales has decided to throw open to competition all public buildings in future erected in the colony at a cost of £10,000 and upwards. The conditions have been prepared by a commission of prominent architects, including the government architect, and the advertisement of the first competition, a gaol to cost £16,000, has been published. We note as part of the conditions that the drawings will be placed before a board of advisers consisting of (*a*) the government architect, (*b*) an officer from the department for which the special building is intended, to be appointed by the ministerial head of that department, and (*c*) one non-official and non-competing architect to be chosen by the Minister of Public Works. The local architects are, like their English confreres, very desirous of having all the names of the board published, indicating that there seems to be world-wide consensus of opinion on this point. The conditions are on the whole very satisfactory and such as a professional board would be expected to draw up.

M. BRINCOURT, in Planat's "Encyclopédie de l'Architecture et de la Construction," has an article on the architecture of the United States, which is most interesting as being the estimate of a representative of a nation which has long since through its atéliers crystalized the art of architecture into a classic conservatism which only a comparatively few bold spirits have been able to break through. To him, therefore, the point of interest is, that this architecture represents the manners and civilization of a new people, ingenious, practical, with no past and no school behind them. Their ideas have been borrowed from the various countries which they have come in contact with, and they have copied, assimilated and modified to suit their own ideas and tastes. M. Brincourt then proceeds to cite a few examples of religious, civil and private architecture. He regards the first as the least original or characteristic, especially in edifices of importance, and he traces the influence of the French school, but with English inspirations attributable to the similarity of religious beliefs and forms. He looks upon the designs of the less pretentious chapels as the embodiment of odd and unexpected conceptions, some of which indicate on the exterior no religious use whatever. With regard to the civil architecture of the United States, he notes the prevailing tendency to what he terms the Anglo-Romanesque, while the classic has its devotees, reproducing European buildings, which he thinks look somewhat strange and out of place in their new settings. Some of the tall office buildings are considered interesting, and their architects are complimented for the, on the whole, successful solution of a most difficult problem. The planning of buildings for athletic associations, with their complications of bathing conveniences, gymnasiums, club rooms and parlors, is set down as distinctively American, as is also the planning of the monster hotels, such as the De Soto, at Savannah and the Ponce de Leon, at St. Augustine.

Coming now to private, or domestic, architecture, M. Brincourt abounds with praise. To use his own words, it is "varied and original, spirited and graphic," and "possesses all the qualities needed to attract and charm." He thinks that even in cities, where the buildings must be kept in line and are limited by stiff party walls on either side, a successful treatment is obtained by means of cleverly managed projections and other features, giving individuality of character to the various houses. Then when economy of space ceases to be a *sine qua non*, and the architect plans for the suburbs or the country, what he terms to be the "suppleness" of the designer displays itself, and this suppleness is, he thinks, employed with much charm in their villas and cottages. Confusion and restlessness, he considers, result from the attempt, especially in pretentious houses, to produce silhouette and pretentious effects. The favorite architectural elements appear to him to be the tower and the porch, the omission of the former feature seeming to be the exception in all houses above the ordinary. He closes as follows:—"To recapitulate, the architecture of the United States, made up from different schools and styles, and adapted to new and special needs, by an essentially practical and industrious people, is full of instructiveness. Not feeling forced to follow traditions which are often incompatible with modern needs, the American architects are right in attempting merely to satisfy, as artistically as possible but also in the most practical way, the requirements of their present mode of life; and it is along that line that their productions may be studied with greatest profit."

A SERIOUS CASE.

TORONTO, August 4, 1891.

EDITOR CANADIAN ARCHITECT AND BUILDER.

"ARCHITECTS AND THE LAW."

SIR,—I should like to call the attention of the profession to a case recently decided in the English courts against an architect, which, if it is to form a precedent, is a very dangerous one. Moott v. Newmarch; tried 10th July, 1891; London. The plaintiff Moott is a doctor, and he desired to have his surgery, which is built at the side of his house, enlarged. He employed the defendant, Newmarch, an architect, to carry out the work for him.

There were some houses in the rear of the plaintiff's surgery, and the owners obtained an injunction to prevent the doctor from proceeding with the enlargement of his surgery, on the ground that the light and air to these houses would be interfered with. The doctor could not resist the application for the injunction, and had to pay the cost, amounting to £277 5s. 10 d. He then sued his architect, Newmarch, for this amount as damages, on the ground that he had been negligent in not obtaining the consent of the owners of the houses in the rear to the proposed additions to the surgery.

The architect denied that there was any duty upon him to to obtain such consent, and he counterclaimed £125 for professional services. To meet the counterclaim the plantiff paid into court £66 11s.

The jury, after listening to the case for a day and a half, in fifteen minutes decided that the architect *was liable*, and as to the counterclaim, the sum paid into court was sufficient.

Such a responsibility has never before been thrust upon architects, but now that this decision has been given, it behooves architects to remember that they must either make themselves acquainted with all the rights and privileges of all "adjoining owners," and to do this must spend a great deal of time in hunting up and perusing leases, deeds of sale, and all such documents, or they must enter into an agreement in writing with the client to the effect that the responsibility of interfering with any such rights rests upon him (the client), and not upon the architect.

Yours truly,

R. W. GAMBIER-BOUSFIELD.

OUR ILLUSTRATIONS.

PROPOSED NEW Y.M.C.A. BUILDING, KINGSTON, ONT.—J. B. REID AND ARTHUR ELLIS, ARCHITECTS, KINGSTON.

The materials will be brick, with rock-face stone trimmings. The interior finish will be plain, but of good quality.

SKETCH FOR AGED WOMEN'S HOME, IN BELMONT STREET, TORONTO.—WM. R. GREGG, ARCHITECT.

The materials to be used in the construction are: red brick, with Ohio stone trimmings. The basement contains kitchen, laundry, boiler room, root cellar, etc. In the attic are bedrooms, storage rooms and bath room.

ENTRANCE TO RESIDENCE OF MR. GEO. G. BOOTH, TRUMBULL AVENUE, DETROIT, MICH.—CARVED IN PORTAGE ENTRY RED SAND STONE.

HOUSES ON BRUNSWICK AVE., TORONTO—E. B. JARVIS, ARCHITECT, TORONTO.

THE ONTARIO ARCHITECTS' ACT.

The *Australasian Builder* in an article on "The Registration of Architects," expresses its opinion of the Ontario Architects' Act in the following terms:

"And now let us turn to the Canadian doings. Setting aside a great deal of technical machinery for the carrying into effect of the principles of legislation, either enacted or desired—matters which eminently concern the parliamentary draughtsmen and the lawyers, but scarcely the architectural press—we find the variations made by the Parliament of Ontario, in the "Ontario Architects' Act," from the provisions put forward by the Ontario Association of Architects in their draft Bill, to be all in the direction of public freedom and liberty of action. But, whereas the very object of the incorporation or registration of professional bodies is to place a salutary check, in the interests of the public, on such extremely latitudinarian liberty, or license, the emendations made by the Ontario Legislature are partly beneficial and partly the reverse. In the former category may be placed the rejection of the provision for a two years' practice of architecture previous to the passing of the Act, as an essential condition of registration, and the recognition of a shorter term of articles than five years when the indenture was made before the passing of the Act; the permission given to the student, under certain conditions, in clause 24 (3), to serve a portion of his time with an architect during the vacations of the School of Architecture (by which he would probably save a year); the indulgence for registration in cases of illness, absence, or inadvertence; the legal allowance of the same fees to architects as are paid to land surveyors, when attending any court as witnesses; and the provisions contained in clause 50 (3) for prosecution under the Act. The omissions from the draft Bill, however, made in the Act are far more prejudicial than the provisions we have just alluded to can be of benefit. The deprivation of the Council of the proposed powers to dispense, in special cases, with their ordinary rules, &c., is a needless dictation of hard-and-fast procedure entangled in red-tape; but of far greater moment is the omission of clause 26 of the draft Bill. At the risk of appearing undemocratic in this ultra-democratic country, we feel called upon to maintain most strongly the paramount importance of drafting into not alone the architectural profession, but into all professions (as distinguished from mere trades), lads only who can show that they have received a fairly liberal education, and who may, therefore, be presumed to possess at least the rudiments of culture and some of the first instincts of a gentleman. While we strongly advocate the recognition for the nonce of the *status quo* in the profession, we still more strongly plead for the most jealous guarding of its gates from ignorance and snobbery in days to come.

But there are other omissions from the Act, of no less grave importance. One of these is the draft provision that only registered architects should be able to recover charges in a court of law. If a Registration Act is to be anything at all, it should be a reality, and not a farce. And, therefore, this very provision would indirectly be one of the heaviest penalties for non-registration that could be devised, and would do more than anything else to bring public discredit on the unregistered (because incompetent) architect. To very much the same effect is the omission of the draft clauses 35, 38, and 47. If it be understood that all competent architects are registered—and this certainly is the view held by most of the genuine advocates of registration—but if, all the same, unregistered architects—"Dick, Tom, or Harry"—may be appointed by public bodies to very important and responsible public offices; if valid certificates may be granted by unregistered men; and if the Council be deprived of the power to cancel the registration of an architect convicted of felony or misdemeanor, or even "of conduct infamous in a professional respect," what becomes of the safeguards to the public, what of the honor of the profession? It seems to us that by their rejection of these clauses the Ontario Parliament have stultified and rendered almost nugatory an Act that in many respects is admirable; and this course surprises us the more because of their rejection of Clause 36. The inclusion of this clause would have provided a salutary check upon the rapacity of unprincipled architects, by restricting them (except by special arrangement) to the maximum as well as the minimum charges laid down in the tariff of the Ontario Association. The professional charges formulated by most of the leading architectural bodies throughout the English-speaking world are now so fair and equitable as between architect and client, that the public, as well as the profession, should be protected from imposition, and justice should be meted equally to both parties. In conclusion, we have only to express a hope that the Ontario architects will succeed in soon obtaining from their Legislature an amending Act, and that our architectural friends in Melbourne and Victoria generally will give the various matters we have placed before our readers their careful consideration, with the view of making the Victorian Registration Bill, whenever it becomes law, as perfect, just and workable a measure as is possible.

MANUAL AND TECHNICAL TRAINING OF ARCHITECTS AND ENGINEERS.*

KNOWING that many things in the early education of architects and engineers need much reform, I will endeavor to point them out in the clearest possible form, and would remind you that, although these are my humble opinions, they are based upon much experience of the practital working man, and the theoretical and practical architect and engineer. That it is necessary for the architect of engineer, as the case may be, to have done some actual work at one or more trades connected with his calling or profession, you may admit, although I can hardly hope to make you or myself believe that he shall necessarily be an expert, for if he does justice to the other part of his profession, I hardly think that that is attainable. But judging from some of our young architects of note, over the border, who have recently been gaining honors in the old world, you will see that even an architect can be a skilful artisan, or shall I say an artisan can become an architect. . . . Do you wonder at the number of unemployed draftsmen or at the low wages paid to a great many, when such cases as the following occur: A tradesman, or someone of limited means, wishes to article his boy (who has shown an aptitude for drawing) with an architect, and pays a premium. No wages are paid, of course, for three years or more. After a little picture-making on the part of the boy, the father knows a man who wants to put up a pair of shops, a cottage, or some other building, and does not want to waste money over an architect. He knows what he wants, and the boy knows what he has done in the office, for which his employer has charged 10 guineas; why, he will do it for £3, or say £2 to secure the job, and as no local board exist, these wretched botches of buildings meet your eyes in every suburban street. No supervision of the building is necessary—the Building Society's surveyor does that when the Society makes progress payment; do you wonder these buildings sometimes fall and kill somebody, and that jerry builders and jerry architects exist? This is how they are made. It is high time that some legal protection was given to the profession, and one of the things that will do most to help it is a higher standard and better education among ourselves. . . . Granted the hand becomes a little unsteady through work, it is more than compensated for by the practical knowledge gained and the respect ensured from the artisan and builder who work under him (the architect). It is as the president of the kindred Association of New South Wales pointed out: the brain-worker must gain more practical knowledge. The hand-workers are already in the field gaining more theoretical knowledge, cultivating the sciences and arts that pertain to their trades and callings. And the same field—thanks to some noble benefactors and a liberal Government—is open to you likewise. The advancement and enlightenment of the artisan does not mean less respect and deference to the architect, unless you wilfully waste your time and opportunities. What artisan can respect glaring ignorance on the part of the master-mind? If the designer of the work show gross ignorance in construction, it places him to a great extent in the power of the builder. A bad drawing from the office soon gets known all over the building. The foreman gets out of temper with it, and the workman gets hold of it: his *practical knowledge* is doing the work, and the respect and love due to the architect vanish. I think one of the first things necessary is that more attention should be paid to the groundwork of the pupil. To begin with, he should be a good writer, a fair arithmetician; then he should have a knowledge of decimals, fractions, square and cube root, and mensuration, be able to work out a simple equation in algebra, and be conversant with at least the first three books of Euclid; he should have a knowledge of practical, plane, and solid geometry, and free hand drawing, elementary physics, practical mechanics, and elementary chemistry. Many, I know, are in favor of the pupil going to a builder for a few years. But I think in these days, when University workshops, and technical schools and colleges are in every large town, this (shall I say waste of money?) can to a great extent be dispensed with. He can learn to make the various joints in carpentry and plumbing; to lay brick and mortar; to work stone at the banker; model in clay, take casts; work in iron from forge to lathe; learn to carve in wood or stone. Building construction, architecture, theoretical and applied mechanics, all are taught, not merely in theory only, but the laboratory and workshops are replete with all conveniences for practical manual work, under the superintendence of professors in each branch. Truly, gentlemen, with these advantages to your hand, you can mould the pupil of the future to your wish. A knowledge of tools and construction is indispensible to all, to say nothing of what is gained in health by their use after stooping all day over the drawing table or writing desk. Another thing I think both architects and engineers err in—their pupils do not see enough of the jobs. They should be sent at all convenient times to assist in supervising the digging out of the trenches and excavations; to see that the fall and levels for drains are correct, the joints in the earthenware pipes made. I dare say many will smile at this,

* From a paper read before the Architectural and Engineering Association of Victoria, by B. F. Storer, April 20th, 1891, and published in the *Australasian Builder*.

and say—"But the clerk of works does that." True; but who is to see that the clerk of works does it? Again, he should see the mortar made, handle the bricks, and be instructed how to test them to see if they are sound and well burnt, to see the timber is free from sap knots, shakes, and other defects, and the joints in the bricks properly flushed; the house built to required conditions. The iron works should also be visited, to see the girders rivetted; the preparation of piers and approaches, to see the men handle the work and put it in position. Many a lesson will be learned that will be of great value to the pupil when his turn comes to design. The stone quarries and clay pits should not be omitted. The saw-mill and timber yard are a very large factor in building. The conversion and manipulation of timber in all its branches is a study itself; he should study our colonial timbers as well as the imported. I have to speak well of the timbers grown here, and they will compare with any imported—if given a fair show and the same treatment as their rivals. . . . . I have endeavored to show you the stumbling blocks that have been so much in the way in the past; holding that when the student takes up the few things I have stated, a better understanding will come to architect, engineer, and artisan; that the noble aim of the one will be reflected on the other, to enable him to produce something grand; and, carrying the impress of the master-mind on one hand, and the skilful execution on the other, to show the soul of both. I have suggested study, you will need it. But the question is what to study; what to do? Surely there is plenty. But that is too much like the work already in hand. Then spend your spare time in construction. Get some wood bricks, and build English, Flemish, or colonial bonds. You will be taught in your classes, if you understand them, how to test cement, to break beams; try to originate for yourselves. Get a beam of your own, and find the constant; make your own lever, and break the beam. Try to calculate the stresses on the different parts of your roof principals, work them out graphically. As you can draw, this will not involve figures. If you have to draw a large chimney, do not be satisfied with having to draw it; calculate what pressure of wind is necessary to overturn it, and if what you are drawing is stable, work out some of your engineering formula, and see if you can make a formula of your own. I think, gentlemen, if I wanted a man, I should not want to see what he had done, but what he could do now, and would like to see him use his tools and colors in my presence. Now imagine a question like this:—(*a*) Draw two lines crossing each other by means of this square and drawing board, and test them for accuracy, and then (*b*) draw an elevation of a segmental window 6 in. x 3 in. rise of arch 9 in. A geometric drawing must not be made on your paper for the length of your radius. (*c*) Find me the centre of the circle in a semi-circular opening, having two equal semi-circles and the circle intersecting, and fill in and complete the frame for easement sashes. Again, write out a short specification governing the excavation and putting in of concrete foundations for a house at South Yarra. The ground has been tested, and the top is sand and loam. A uniform depth of 2 ft. is required all over to ensure stability, but allow in your specification for extra foundation, if necessary. Now, gentlemen, take this last question. How many young men could sit down and write that in a proper manner? and take some six out of ten ordinary draughtsmen, and see if they could work out *a*, *b*, and *c*, in anything like a proper form; and yet these young men can draw houses and color them on paper—could draw you the five or *more* orders of architecture, if necessary. I am not despising drawing by any means, gentlemen. I rather like it, but a drawing to me must be of some use, and not of the kind that requires the practical knowledge and experience of a builder to make head or tail of it. Stamp your drawings and designs with true art and construction, and you will make the art workman, for he must train himself to understand and carry out your ideas. Get yourselves acquainted with the materials, the tools, and the men, and you will find that your learning is not a dangerous thing.

ONTARIO AND QUEBEC ARCHITECTURAL EXAMINATIONS.

WE have before us the examination papers of the Ontario Association of Architects and those of the Quebec Association. Copies of the former have been sent to all registered students, and we presume the same has been the case with the latter. The Quebec Association calls for only an entrance or matriculation examination, and examination for registration as architect. The Ontario Association interposes an intermediate examination, with the object of keeping the student more continuously at work, spreading the work more evenly, and reducing the tendency to cram towards the end. The examinations of the Quebec Association are to be held in July and December of each year, while those of the Ontario Association will be held for the first time on the 7th of April, 1892. We propose to print both papers in our next issue for the information of any who may not have received copies, and for the sake of the comparisons which may prove of interest to those concerned.

In plumbers' work in England, it is usual to charge sheet lead by weight instead of measurement, although the weight is ascertained by measuring and not by weighing; lead-headed nails, wall-hooks and holdfasts are charged separately and by number; clout nails by the hundred; pipes by the lineal foot; brass-work, pumps, closets, etc., by number.

PROVINCE OF QUEBEC ASSOCIATION OF ARCHITECTS.

THE first examinations of the Association were held on July 30 and 31st, at which Messrs. S. A. Findlay and W. B. Hutchison presented themselves before the examiners for matriculation to enter the study of architecture. They both succeeded in passing this preliminary examination. The Board of Examiners who officiated were Messrs. Roy, Thomas and Taylor.

There was quite a large gathering of architects and students belonging to the cities of Montreal and Quebec present at a meeting held on the evening of Tuesday, August 4th, to formally open the new rooms which have been procured and furnished by the Association at 186 St. James street, Montreal.

Mr. A. C. Hutchison presided, and on behalf of the Council presented the rooms to the Association. The rooms will be open on Wednesday evenings from 7:30 to 10 o'clock, and from 2 to 5 o'clock on Saturday afternoons. It is gratifying to be informed that a Students' Sketch Club has been formed, the officers elect being as follows: President, Mr. Lareau; vice-president, Mr. Wallace; secretary, Mr. P. R. A. Labelle; council, Messrs. MacVicar, Crook, Falbord, Lafole, Harriett and Martel.

Messrs. Hutchison, Raza, and Clift kindly lent books and photos for the use of the students for the evening.

The rooms engaged for the use of the Association have been neatly furnished, and the Council are now considering the formation of a library and procuring the different periodicals to lay on the tables. This they expect soon to accomplish, and by the winter to have regular lectures given to the students.

CEILING DECORATION.

IT is a very common fallacy, says *Furniture and Decoration*, that to color a ceiling is to lower it. Still more often is this result expected if projecting ribs or mouldings be added to divide the blank surface. Yet it may easily be shown in argument, as it is constantly exemplified in practice, that the opposite effect is quite as often produced, color being the determining agent. Let us assume the wall of a small private library, twelve feet high, to be hung with one of the embossed leather papers now in frequent use; the pattern brown and gold, on perhaps a warm green ground; the bookcases below, of oak or walnut wood, with their contents, maintaining a quiet similarity of general tone. The cornice is, say, nine inches deep. If you leave it a light tint and the ceiling plain, the room will appear quite nine inches lower than it would were the cornice brown like the bookcase. And if this brown is continued on to the ceiling by means of wooden ribs, the room will gain at least another five inches of apparent height.

The fact is, that the point at which the attention is arrested by a marked contrast is that by which the eye assesses the height; and since the mouldings of the cornice project inwards to the room, even *more* apparent height is gained (than is marked in vertical distance) when the contrast is placed high, since advantage is taken of an apparent perspective.

On the other hand, if it be desired for other reasons to retain the wooden ribs and cornice, yet not to add to the apparent height, a corrective is readily applied in color—either in the form of a narrow frieze of sufficiently emphatic contrast, below the cornice, or by contrasted relief of color at the same point as the cornice itself. Even a line of gilding may suffice.

In the same way the influence of a wide frieze or a dado on the proportions of a room is largely controlled by the coloring. A wide frieze may be used of the same coloring, or even of the same depth of tone as the wall below, without materially affecting the apparent height; but a very small amount of contrast in tone will be sure to tell in the case of a large plain surface. Hence, if a frieze with some contrast is to be used where height cannot be sacrificed, it is essential to place its brightest contrasts as high up and as near the cornice as possible, lest the eye be arrested at the bottom, and the frieze itself, together with the cornice, be relegated to the ceiling. Some rooms are high enough to bear this sacrifice of wall, in which case they largely gain in apparent width and space.

A piece of bluestone 20 feet wide, 24 feet 9 inches long and 10 inches thick, was recently quarried near Kingston, N.Y., and it is claimed to be the largest piece of bluestone ever quarried. It weighs over twenty tons, and is so large that it cannot be used for any purpose until cut.

FIREPROOF ROOF CONSTRUCTION.*

Roof construction of a building is a very important point of fireproof construction, this being the access for fire from above, caused by sparks and flames of any burning neighboring structure. The cheapest and best fireproof construction that can be obtained is gained by the using of T iron and book tile. T irons should be regularly spaced at 18-inch centres, following outline of slopes in roof which is given by the change of level of roof beams upon which T iron rest. These T's should be held in position with iron clamps to roof beams. Two and one-half inch or 3-inch T's are generally used for this mode of construction. The size of the T iron governs the size of the book tile that has to be laid between them. If 2½-inch T's are used, 2½-inch tile must be used. This will bring the top of the tile about ¾ of an inch over the edge of the stem of the T. The name of book tile is given tile, owing to its shape which is like a book. Good tight joints are obtained by using this tile, as one tile fits in the other, which does away with a vertical joint, which in no case should be allowed on a roof. All tiles should be bedded in mortar and all joints along T's should be flushed up, leaving an entire smooth surface. If a concrete is desired on the roof, upon which tarred paper and gravel is to be laid, it should never be composed of either cinders or crushed stone mixed with sand and cement and water. This is a glaring error which is quite frequently indulged in. No matter how hard you try to get an even surface, you will always find a cinder or stone here and there sticking up, which cuts through the tarred paper, and if walked upon injures the roof. A concrete composed of sand and cement will answer first for this purpose. I cannot see why it is that a concrete is at all necessary. It is better for the roofer and cheaper to apply the tarred paper direct on the tile, using a ply or two more of tarred paper. The cost of same is amply made up by omitting concrete. These remarks apply to flat roofs. Where roofs have a rake not over 45 degrees, a similar construction (as aforementioned) regarding tile work can be followed. If rake of roof is any steeper, each tile should be either wired or bolted to T-irons. This is especially necessary when a part of the roof drops off to a vertical line. One or two-ply of tarred paper should cover these roofs before slates or roof tile are nailed to them. Roofs that are to be used as promenade decks require a stronger construction; regular floor arches are required here. Trusses that support roofs or carry additional loads should be thoroughly fireproof, as this is a vital point of fireproof construction. If this is not done it exposes the steel and iron to the heat of a fire that may start below them; consequently a grave danger threatens the destruction of the trusses and whatever they may support. This construction occurs mostly in theatres and large halls. If lower chords of trusses carry a floor, or, in other words, the ceiling of the auditorium, the entire truss should be fireproofed, no matter if it is cut off from below by this floor or ceiling. If truss is so designed that lower chords show below ceiling-line, they should have especial attention as regards fireproofing.

Suspended ceilings are only used to shut off the roof construction from view, and to give a level ceiling, therefore this construction is very light. Hangers are suspended from the roof-beams, to which T-irons, say 3 times 3 inches, are attached; spacing latter about 5 feet centres. On these, at right angles to the direction they take, 1-inch T-irons are spaced 12-inch centres. Between the 1-inch T's a light tile is set, to which plastering is applied from below. The general construction of to-day, in our modern fireproof buildings, is to make the ceiling of the last floor as strong as a regular floor. This is done to afford ample storage space and still more important space for pipes, tanks and machinery.

Furring of the inside of outside walls with hollow tile is the most thorough preventative against moisture penetrating through a wall. Each tile should be carefully and regularly set. The thickness of tiles used for this purpose are 1½ inch and two inches. You can therefore see that they depend a great deal on the condition of the wall to which they are to be applied. These walls should be as plumb on the inside as they are on the outside. The use of wood for this purpose should not be allowed, as it is not fireproof or moisture proof. Moisture will affect wood so that dark discolorations will appear on plaster, every lath and strip being clearly shown. Corrugated iron laths and wire-lathing are also applied to these walls, but also show the defect of this construction as wood laths. Hollow air spaces are sometimes built in walls to overcome this defect, but that is too expensive a construction and takes more room for walls. The use of porous bricks is the best construction for this purpose. The good qualities of this material have been mentioned before.

Skylight curbs should be built from ceiling-line of last storey, or attic floor, through roof. This is a very important feature of a fireproof structure. No windows should be called for in these curbs. Any light that is necessary for attic should either come direct through roof or through outside walls. These curbs are generally called for to be built of hard glazed tile laid in pure cement mortar, and all joints to be neatly struck. This is supposed to constitute the finish of this part of the work. This construction may look very nice, but it is not fireproof. It is in a dangerous locality, as the draft of any fire that may occur in the storey below will invariably be carried up in this direction, owing to the ventilators in the skylight above. Heat and water will splinter this wall in a very short time. Consequently flames and smoke will have access to the exposed roof construction, water tanks, machinery, vent flues, steam and water pipes, &c., which are located in this part of the building, and will cause dire ruin and paralyze the machinery and sanitary fixtures of the entire building. These skylight curbs should, therefore, be built of a material that will withstand the combined attack of fire and water.

Elevator pockets should be built in every elevator, in order to shut off any smell, flames or smoke that may arise from defective machinery or sanitary arrangements in basement, as a tremendous draught is always rushing up these shafts. This would not be very pleasant or healthy for the occupants of the building. I would even cut off the useful freight elevator from running down to basement, if a partition, which would stop this draught, were not built around same in basement. Such a partition should be set back from elevator, allowing ample room to load and unload freight from same. Elevator pockets should be built as follows:—T iron should be suspended below first floor on hangers about 18 inches or 2 feet below floor beams, spacing T's 18-inch centres and setting book tile between same. Walls of pockets should be built of 3-inch partition tile. Stairs that start from basement and run up to roof should also be cut off from rest of basement by a similar partition as mentioned about freight elevator, for similar reasons.

Especial attention should be paid to see that all beams in pipe-shaft which enclose cylinders of elevators and pipes are thoroughly covered, making due allowance in the framing of your iron work that sufficient space is given to allow of one continuous line of tile. One of these shafts, should a fire get into it, would like a huge chimney. All beams in elevator shaft and stair wells should be covered. If ornamental iron fascias are called for on these beams, then the construction of same should be so designed that the iron contractor is not obliged to knock off fireproofing in order to connect his work to floor beams. The fireproofing of the beams, to which guides are attached, should never be done until guides are in place.

Raised floors for water-closets are used when the construction of a building is of such a nature as not to admit of enough space or room to carry pipes in a distinct and separate passage. These floors are built of either book tile and partition tile or book tile, partition tile and T-irons. When book tile and partition tile are used, partition tile are built in rows, about 18-inch centres, to any height upon which book tile are set. If T irons are used in addition to these tiles, partition tile are spaced in rows about 5-feet centres, upon which T's are set on 8-inch centres for book-tile, which is to be set on T's. This will admit of ample space for all pipes below floor.

Trimming of iron is a very important feature regarding fireproofing—flat-arch construction. All beams should be spaced as regularly as possible. All lower flanges of beams must be on a level line. If beams are all to be level on top, they must be necessarily the same size. Channels or flat bars must be built in walls to receive skewbacks. Flat bars are preferable to channels and are cheaper. The rods should be spaced not more than 6 feet apart, for framing around stair wells and light shafts; tie rods should be spaced not more than 5 feet apart. If a 15-inch beam is used and a 9-inch arch is to be built between them, tie-rods should be put in 4½ inches from bottom or lower flange, or beam will be tipped over. This is especially dangerous at well holes. If a 9-inch I and a 9-inch arch are used, tie-rods should be placed in centre of beam. For like construction of different sizes of material, a similar proportion of location of tie-rods is necessary. All pipe-shafts, dumb elevators, vents and fireplaces should have iron framework around them. I beams should be used instead of channels for this purpose, as fireproofing can be more securely fastened around them. If a 20-inch girder is level on top with a 9-inch beam, then angles should be riveted to web of 20-inch girder 9 inches from top flange. The levels of all lintels in relation to floor lines and wood finish, should be carefully studied, raising same enough to allow ample room to apply fireproofing. This will vary at every step from 1 inch to 2½ inches, according to width of lintel. In complicated framing especial attention should be given if fireproofer can apply his fireproofing after everything is framed together. Cases turn up every now and then where it is an impossibility to cover a certain vital point, after all framework is in place, which should have been put in at the same time it was framed together.

Ample sections and levels should be shown on each plan. Proper allowance for sizes of all well holes and elevator shafts should be made. It should be borne in mind that at least 1 inch should be allowed over edge of I beam at these openings for fireproofing. To this you have to make allowance for ornamental iron fascias, &c. Roof beams should be securely tied together with tie rods. This is especially necessary when beams are carried on walls, the weight of parapet and firewalls being in many cases too light and weak to stand the thrust of a series of arches. Anchors and plates should be used quite freely if you have a similar construction. These remarks apply to roofs where arches are used. If floor beams are carried on an iron skeleton which is built in walls, a similar construction is advisable when you get up as high as the attic floors and roofs. When bolts are used for connecting one beam to another, the threads of same should finish flush with the head of the nut, or should be turned around, leaving head of nut on outside. This is imperatively necessary; if it is not done, most of the skewback or butt has to be cut to pieces as a square bearing is necessary. This will naturally weaken the entire arch.

T irons for roof construction should be spaced regularly. Odd spaces to be worked over next to walls. T's should also be securely fastened to roof beams with clamps. Ceiling should be spaced similar to roof T's. Clamps are not necessary. Spacing of T's for bay construction should be carefully looked after. Odd spaces should always be worked over to end walls. If cantilever brackets occur a similar spacing should be followed, leaving odd space against bracket. Complete sections should be given of this work for every floor if there is any change of levels, showing if T's are bent over flanges of beams or rest direct on them, also showing whether you want a level ceiling or not. If cantilever brackets frame into a plate girder from one side and floor beams from another side, and a level ceiling is required, then rivetheads in lower flanges of girders should be countersunk. Ample room should be given around columns for fireproofing, so that a whole block of tile at least 3 inches thick can be built up independent of clamps or wire. In no instance should the fireproofing around the column be omitted for the sake of lack of room to case same with marble. If all these points would receive a little more attention, many hours of bother and worry would be spared to the party who is designing a building where such construction occurs. All these items should be carefully shown on plans, and superintendents should see that they are carried out as shown.

Plans and specifications for fireproofing should clearly and distinctly specify what is required. Details and section, &c., should be shown of everything required. It is simply appalling to read some of the specifications of this work that are written nowadays. Everything is left for the fireproofer to ferret out as best he can. This is entirely wrong, as it shows either a lack of knowledge of this important branch of building construction or disgraceful carelessness. Each and every different piece of work should be itemized, noting in what stories each kind of work is wanted and sizes of material required. A new specification must be written for every new building, as it is impossible to expect a standard or office specification to hold good regarding construction of work, owing to great variations in design. They are at the same time confusing and misleading, causing an endless amount of bother.

Iron contractors should furnish every piece of iron construction regarding framing work. Small T irons and clamps under lintels should be furnished by fireproofer. All holes for pipes through floors and partitions, &c., should be bored by plumber, gas or steam-fitter. Plasterer should replace all tiles he has displaced during his work. And finally, one and all contractors should be held responsible for any damage to work of another contractor's, any cost of replacing such work to be charged to him and taken out of his final payment. It will be found that, by making such rulings as just mentioned, you will not be continually called upon to settle clashes that occur between contractors and owners of buildings.

For heights of long partitions that are not braced or bonded into any cross partitions, the following rules regarding thickness of partitions should be followed:—3-inch partition, 12 feet high; 3½-inch partition, 13 feet high; 4-inch partition, 14 feet 6 inches high; 5-inch partition, 17 feet 6 inches high; 6-inch partition, 20 feet high; 8-inch partition 25 feet high.

Partitions can be built a great deal higher, but have to be built in such a manner that a space is left between, which is governed by the height desired. This, of course, necessitates two rows of tile, or double partition, as lateral stiffness is what you have to look out for. Smoke stacks and elevator shafts can be built to any height desired if the proper sized tiles are selected.

For spans of flat floor arches, the following sized spans should be used. These spans are the extreme limit which should be allowed. 6-inch arch, 5 feet; 7-inch arch, 5 feet 6 inches; 8-inch arch, 6 feet; 9-inch arch, 6 feet 6 inches; 10-inch arch, 7 feet; 12-inch arch, 7 feet 6 inches. The spacing of beams should not be governed by any sized span given to you, but should be governed by the load that is to be applied on beams. If it is found that strength of beams is sufficient for such spans, that settles all questions regarding same.

If fireproofers are called on to estimate on any work where iron construction is used, they require both iron and general diagram.

* From a paper read before the Chicago Architectural Sketch Club by Mr. E. H. Heppner.

HOLLOW WOODEN CONSTRUCTION.

A DEAL of missionary work will have to be done in this country to reform the hollow wooden construction which is the bane of so much of our building, says the *Northwestern Architect*. Prof. John M. Ordway has prepared a valuable table showing the conductivity of many substances, and throws more real light on the real value of the use of air spaces as heat savers than anything which we remember to have seen. The experiments were made uniformly by collecting the heat radiated from 1 square foot of heating surface across or through 1 inch of the materials to be tested, and the heating and absorbing surfaces were maintained as nearly as possible at a difference of 100° F. The results were given in British heat units, the time of each test being one hour. The simple air spaces were tested in two ways—first, with the heating and absorbing surfaces vertical and separated by 1 inch of air; second, with the heating surface above and the absorbing surface 1 inch below it. It will be seen that in the latter case only radiation and conductivity would act, while in the former convection would come in place. As a consequence the heat units transmitted were in the first experiment 108 and in the second (without convection) 43. As the air spaces of buildings are rarely or never placed as in the second experiment, but are relied upon to prevent the escape of heat from a side or underneath, and as a greater thickness of air space would only leave a freer circulation, we may assume that under the conditions usual in building more than 100 heat units would probably be transmitted across an air space for each foot of surface per hour, when the different sides vary in temperature, as in Professor Ordway's experiments. It is worth while to know that under the same conditions of temperature 1 inch in thickness of soft woods (across the grain) or their sawdust will transmit about 75 units, the best slag wool, 50; wool, 36, and hair felt, 56. The list of substances given is a long one, very practical, and, we think, adds much to the exact knowledge hitherto available.

The company recently organized at Owen Sound for the manufacture of Portland cement have expended about $100,000 on buildings and plant.

SANITATION AND HEATING

HOW TO FIGURE ON PLUMBING WORK.*

FIRST of all, read the specifications through carefully, if there are any specifications, and figure to do the job the way they are written. Don't guess at the intent of the specifications; you might get left, especially if you have never figured for the party before. For instance, a certain plumber figured on a set of specifications some time ago which called for a 6-inch extra heavy pipe running horizontally and out through the roof. He supposed, of course, it was a mistake as the house was only a small one with one bath room, but he did not ask the architect; he was afraid to bother him, and he knew that four inches was absolutely large enough, and he thought the other plumbers would not know any better; so he figured on four inches, and figured it close. He got the job, and much to his surprise and disappointment, the owner was an ex-tunnel contractor and wanted the pipe just that size. In vain our friend talked fouling surface, insufficient flush, etc. The ex-contractor closed his left eye knowingly, and said: "Me bye, that's what I used to tell the railroad company when my tunnel was too small, only I could not work the fouling surface gag." Result: our friend made no money on his job.

In the next place, read the specifications carefully so as to leave out nothing. Measure the length of soil pipe, vent and waste supply and safe waste pipes. Then the writer's plan is to have a schedule of trimmings to go with each fixture; for instance, each tank water closet, put up according to our city plumbing rules, which require 1¼-inch tee, ¼-inch brass ferrule, 15 pounds sheet lead, 6 feet 1¼ flush pipe, 8 feet ½-inch strong lead supply from tank to floor, 2½ feet 2-inch lead vent, and some other essentials such as tack solder, etc. These trimmings, I call them for want of a better name, I have carefully noted down in a small book the net cost of each item and the total cost of all the items. Then if the closet sets on a marble floor, or if any other variation from the standard way of putting up closets is used, it is vastly easy to deduct that particular item or set of items. The writer uses the same system with wash stands, an itemized schedule from cocks to solder, and the same methods for bath tubs, sinks, urinals, and all other ordinary fixtures. It is readily seen that by having the net cost of the fixtures with the trimming added to the floor line and the vents 2 ft. six inches from the trap, that this method saves a good deal of small detail work and guessing, besides saving a vast amount of time. If only one basin cock is used on a slab or some particular priced trap is specified, or some point of this sort comes up, it can more readily be taken care of in this way than in any other known to the writer; besides, this method does away with many uncertainties which some plumbers encounter when they figure soil pipe put up so much per foot, fixtures at list to allow for trimmings, etc. In the matter of trenching for sewer or water services, the writer usually estimates the digging per foot as the soil is very even in this section. But the pipe is always figured at net prices. The last and most important point of all is, of course, the labor. There is, however, one point to be considered in figuring labor, which if not taken into account will bankrupt the wealthiest plumber. It is not how many days *can* the plumber do it in, but how many days *will* he do it in. It will not do to be too great an optimist on labor. Take men as you find them, then figure a fair day's work, and then see that you get it. But recollect, after you have figured all your lines of pipe, all your fixtures and labor, then comes the riddle like that propounded by the Sphinx of old: How much profit shall I add? And those who fail to answer it, like the older victims, will perish; the difference, however, is, the plumber will perish of starvation in place of the shorter death of being gobbled up. Before figuring the profit expected on a plumbing contract, it is almost unnecessary to say that the items of material and labor should be closely looked over to see that nothing is left out or repeated. It is best, in the writer's judgment, to study the proposed job from water services to fixtures just as if he were doing this job himself in order to intelligently judge the amount of labor required on the work. It is always a

* Abstract of a paper read before the Master Plumbers' Association of Kansas City, Mo., by Dent Yates.

good plan, also, to remember that 10 per cent. profit on material and labor represents on a job of from $200 to $1,000 simply the shop expenses, allowing nothing for the master's expenses and time, and no plumber known to the writer ever made any money and kept it and stayed in business without getting from 25 per cent. upwards on contract work, including profits on extras of course.

Another thing, don't worry if some patent-leather plumber seems to be getting all the contract work in sight at cost or near it. He may dazzle your eyes with his new wagon and gilt sign; the travelling men may tell you that Skinner is a hustler; that he runs thirty-six men; that he has the Skylight flats and sixteen tenements in a row; don't let that sort of talk move you a peg. Do what little job work you can get, make your customers your friends, and make it a rule that if you cannot get the cost of work with your living added, to let that job go and try another job. Discount your bills and remember the railroad rule in taking contract work: In all cases of doubt take the safe side. Don't contract a job if you have any doubt whatever about getting your money. Don't imagine the mechanics' lien law will get you your money; it is little more than a bluff. A slippery lawyer and a slight technicality will put you in the position of the fellow that drove the hearse: He was not in it. Finally, the writer invariably goes over his work when it is finished to find out what the job did actually cost him. I believe that plumbers get tangled up, and into the clutches of the sheriff, for the reason that they get half way through a lot of work they are losing money on, and get a lot more at the same price, without knowing they are meeting their Waterloo when settlements become due.

HEATING BY HOT WATER.

WHEN the quantity of air to be heated per minute has been ascertained, says a writer in the *Plumber and Decorator*, the quantity of pipe that will be necessary to heat the room may be found by the following:

Multiply the excess of temperature of the flow-pipe above that of surrounding air by the difference between the temperature at which the room is purposed to be kept, when at its maximum, and the temperature of the external air, and divide this product by the difference between the temperature of the pipes and the purposed temperature of the room; then, the quotient thus obtained when multiplied by the number of cubic feet of air to be warmed per minute, and this divided by 222 (the number of cubic feet of air raised 1 deg. per minute by 1 ft. of 4 in. pipe) will give the number of feet in length of pipe 4 in. diameter, which will produce the desired effect.

When 3 in. pipes are used, the quantity of pipe required to produce the same effect will, of course, be different. To obtain it, the number of feet of 4 in. pipe obtained by the above rule must be multiplied by 1·33. If 2 in. pipe be used, the quantity of 4 in. pipe must be multiplied by two.

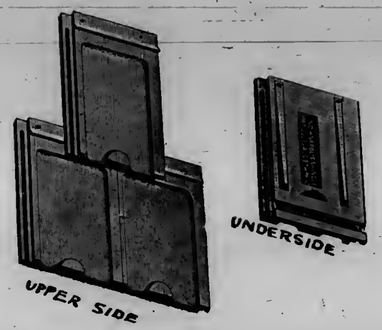
A well known company who make the manufacture of steam and hot water heaters a specialty, now advocate a different method of figuring greenhouses to the one heretofore employed; namely, by exposure; that is, counting in the entire exterior surface, glass, sides and ends. The old method was simply a consideration of the "glass surface" alone, and was liable to error through varying differences in the construction and location of the sides and ends. A table which is conservative and based on a large number of actual trials, shows the amount of square feet of pipe necessary to heat any given number of square feet of exposure to a maximum night temperature of 50 degrees, and also what will be necessary to heat the same amount of exposure to a higher temperature of 60 degrees; this latter being the highest that florists generally want. In computing the total exposure of the greenhouse, one-third of the square feet of the ends and exposed outside wall surface is added to the actual square feet of glass. After finding the number of square feet of piping that will be necessary to heat the house to the given temperature, then it is easy to transfer the square feet of pipe into linear feet of whatever size of pipe may be chosen. —*Master Steam Fitter.*

Mr. Harry G. Powell has opened an office as architect at Stratford, Ont.

MANUFACTURES AND MATERIALS

CLAY FOR SHINGLES.

WE reproduce from the *Clay Worker* cuts of a new shingle tile or "clay shingle" as it is called, which seems to be a great improvement upon the ordinary form in use here. Its general upper surface is depressed, leaving a raised rim wider on one side and grooved to receive a lip on the adjoining tile. The underside of the tile has two ribs, giving strength with lightness, and a groove near the botton edge forming a drip. It is claimed that these tiles so securely lock that the heaviest winds cannot lift them. The size is 7 x 10 inches, with an exposure of 6 x 8



inches. We would be glad to have an expression of opinion from our subscribers who are in the roofing business, or other practical men, as to the merits or otherwise of this tile.

There is little doubt but that a snow and waterproof tile of light weight and great strength would fill a long felt want. Slates are utterly unreliable as a protection against fire, even a moderate heat cracking them and exposing the wooden roof beneath, while wooden shingles are not durable enough for a first-class building, and unless laid on a bed of good mortar more dangerous in case of fire than slates.

ASPHALTE VERSUS TAR AND GRAVEL PAVEMENTS.

Editor CANADIAN ARCHITECT AND BUILDER.

SIR,—Asphalte pavements are in danger of falling into disrepute, not because asphalte has been found wanting in any property necessary to the making of a good and durable pavement, but owing to a pernicious habit, either the outgrowth of ignorance or carelessness. I refer to the misleading statements to be met with daily in the columns of our newspapers, as furnished to them by corporate bodies and others to the effect "That an asphalte pavement is to be laid on such and such a street," when invariably the pavement is to be constructed of tar and gravel. It is not my intention to go into the respective merits of asphalte versus tar and gravel, as I think it would be an insult to the common sense of your readers to attempt to draw such a comparison, but simply to point out the injustice done to asphalte in general by having such inferior materials as tar and sand dignified by its name.

There are many brands of asphalte on the market, some of them I am sorry to say of an inferior quality; therefore I consider that it is quite sufficient for the genuine article to have to answer for the sins of these brands without being compelled to adopt those of such a primitive and out of date mixture as "tar and gravel."

Yours truly,

JUSTICE.

JOINTS FOR CAST-IRON PIPES.

THE ordinary method in this country for putting cast-iron water or waste pipes together is by a lead-caulked joint. This answers very well when the pipes lie quietly in the ground. But pipes do not lie quietly in all cases. And in houses where hot and cold water is alternately passing through the pipes, expansion and contraction come into play, and the result to the joints is anything but satisfactory. If a steam drip enters one of these pipes, the lead ring forming the packing of the joint will work out upon the pipe within a few months.

Pipes underground are liable to disturbance from a variety of causes. Leakage usually results from any movement of the pipe; with water-pipes these leakages are annoying and costly. If a cast-iron pipe happens to be carrying gas instead of water, the leakage at once becomes costly and dangerous.

The lead-caulked joint is costly, and at the same time difficult to make well in confined locations. In plumbing work it is no uncommon thing to

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